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FACTORS ASSOCIATED WITH CHILDREN'S HEALTH IN TAIWAN AND THE U.S.

by

Jyu-Lin Chen  
DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

NURSING

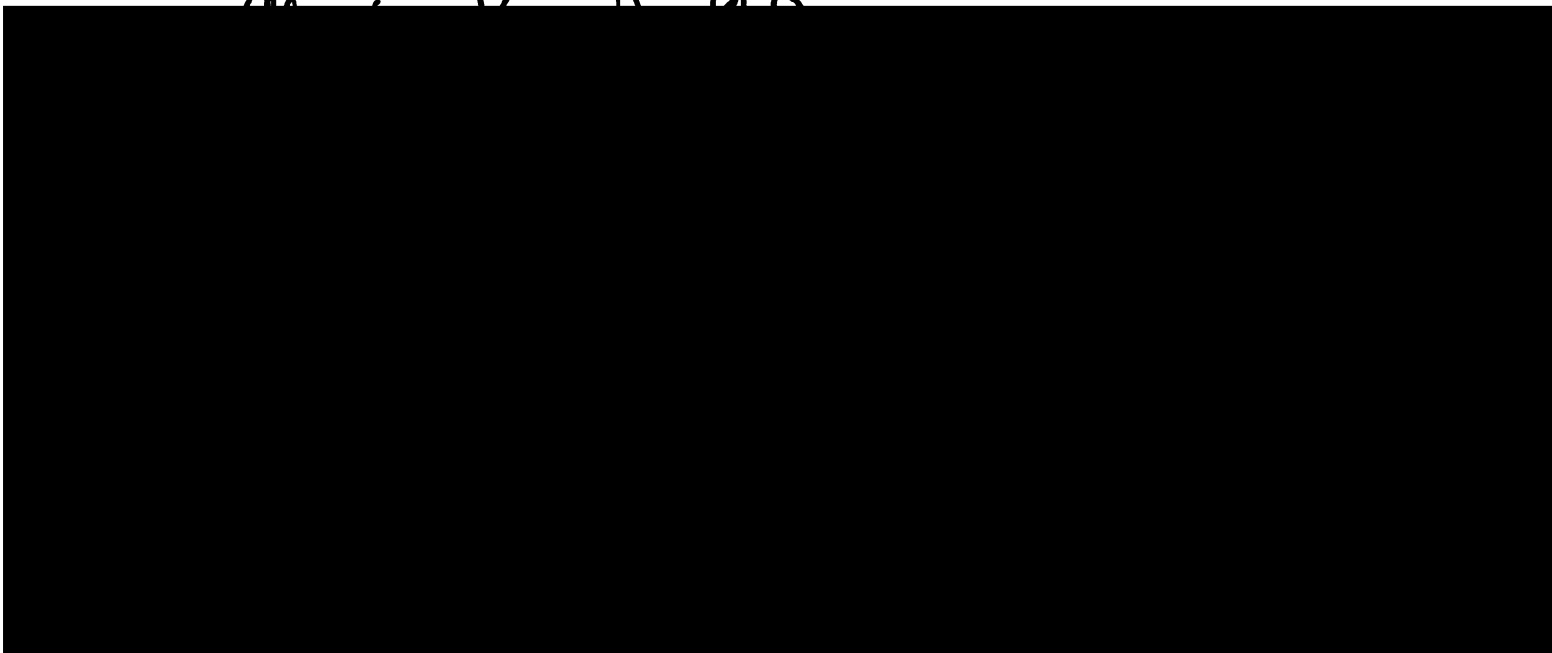
in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Ph.D. in Nursing



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FACTORS ASSOCIATED WITH CHILDREN'S HEALTH  
IN TAIWAN AND THE U.S.

Jyu-Lin Chen, R.N., Ph.D

University of California, San Francisco, 2002

A cross-sectional study design was utilized to examine factors associated with Chinese and Chinese-American children's health and body composition. A total sample of 163 children and their mothers were enrolled in the study (Taiwan N=95; U.S N=68). Mothers in both countries completed basic demographic information, the Family Assessment Device (FAD), Attitudes Toward Child Rearing Scale (ATCRS). Mothers in the U.S. also filled out Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA). The body mass index (BMI) was used to measure children's body composition. Children had their body mass and stature measured and filled out self-administrated physical activity checklist (SAPAC), Food Frequency Questionnaire (FFQ) and the Schoolagers' Coping Strategies Inventory (SCSI). Pearson Correlation Coefficient test was performed to examine relationships between independent and dependent variables. The multiple regression model indicated three variables significantly contributed to the variance in children's BMI: parenting style (5.5%), communication (5.2%) and sedentary activity time (2.3%). The model as a whole explained 11.4% of the variance in children's BMI ( $R^2=.114$ ,  $F=5.086$ ,  $p=.001$ ). Beta coefficients indicated that lower scores on parenting style (more democratic), high scores on family communication (poor communication), and higher scores on sedentary activity time were related to higher BMI after controlling for the country difference. This study revealed that poorer communication within families, more democratic parenting, and more sedentary activity contribute to higher

BMI in Chinese and Chinese-American children. Families with clear verbal and nonverbal communication and structured parenting, which has clear rules and expectations, help to regulate a child's health behavior. This study is first to examine factors associated with Chinese and Chinese-American children's health and their body mass. Thus, improving family functioning and parenting practices as well as teaching appropriate coping strategies and problem-solving skills can help improve children's health and maintain healthy body mass.

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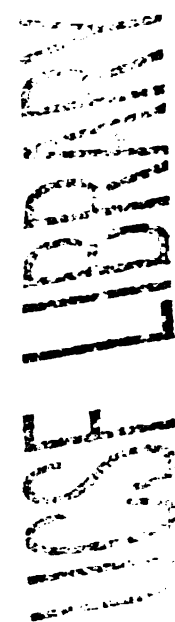
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## TABLE OF CONTENTS

	<u>Page</u>
ACKNOWLEDGEMENTS.....	iii
ABSTRACT.....	iv
LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
LIST OF APPENDIX.....	viii
CHAPTER ONE INTRODUCTION.....	1
Introduction.....	1
Statement of the problem.....	4
Prevalence of childhood obesity.....	4
Impact of childhood obesity on health.....	6
Factors associated with childhood obesity.....	7
Purpose of the study.....	14
Significance of the study.....	15
CHAPTER TWO LITERATURE REVIEW .....	17
Familial factors associated with childhood obesity.....	17
Family environment.....	17
Family functioning.....	19
Children’s dietary behaviors.....	22
Parental feeding practices.....	24
Physical activity.....	28
Chinese children’s physical activity.....	29

Physical activity and obesity.....	30
Children’s physical activity intervention.....	32
TV viewing.....	34
TV viewing and obesity.....	35
Childhood obesity interventions.....	42
Intervention studies.....	43
Meta-analysis.....	45
Conclusion.....	48
Conceptual framework .....	50
Assumptions.....	52
Research aims and research questions.....	52
Definition of terms.....	53
<b>CHAPTER THREE METHODOLOGY.....</b>	<b>55</b>
Research design.....	55
Description of research setting.....	55
Sample.....	57
Human subjects assurance.....	57
Nature and size of sample.....	58
Criteria for sample selection.....	59
Procedure.....	60
Data collection methods.....	63
Techniques .....	63
Instruments.....	64



Statistical analysis.....	73
<b>CHAPTER FOUR RESULTS.....</b>	<b>74</b>
Family Information and Demographic Characteristics.....	74
BMI and overweight.....	76
Aim 1.....	78
Aim 2.....	83
Aim 3.....	85
Aim 4.....	85
<b>CHAPTER FIVE DISCUSSION.....</b>	<b>89</b>
Communication and children’s health .....	89
Affective response and children’s health.....	93
Parenting practice.....	94
Children’s physical activity/inactivity.....	102
Children’s coping.....	103
Acculturation.....	107
Other significant findings.....	110
Family environment.....	110
Food and nutrition.....	112
Conclusion.....	115
Limitations.....	117
Further implications for nursing and research.....	118
<b>REFERENCES.....</b>	<b>121</b>

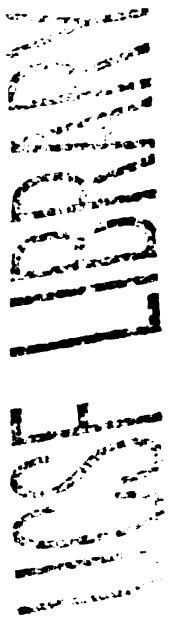


## LIST OF TABLES

	<u>Page</u>
<u>Table 1.</u> A Meta-Analysis on Randomized Experimental Childhood Obesity Study.....	143
<u>Table 2.</u> Measurement Time.....	144
<u>Table 3.</u> Analysis Plan.....	145
<u>Table 4.</u> Study demographic data.....	146
<u>Table 5.</u> Overweight classification and distribution.....	147
<u>Table 6.</u> Internal consistency on each tool.....	148
<u>Table 7.</u> Means (SD) of tools in each country.....	149
<u>Table 8.</u> Top five most frequently mentioned coping strategies by country.....	150
<u>Table 9.</u> Top five most effective coping strategies by country.....	151
<u>Table 10.</u> Top five most mentioned stressor by country.....	152
<u>Table 11.</u> Pearson correlation coefficient .....	153
<u>Table 12.</u> Stepwise multiple regression summary table.....	154

## LIST OF FIGURES

	<u>Pages</u>
<u>Figure 1.</u> Study framework.....	155
<u>Figure 2.</u> Demographic.....	156
<u>Figure 3.</u> Overweight distribution by age.....	157
<u>Figure 4.</u> Overweight distribution by gender.....	158
<u>Figure 5.</u> Findings within study framework.....	159



LIST OF APPENDIX

	<u>Page</u>
<u>Appendix 1</u>	
Study CHR approval.....	160
<u>Appendix 2</u>	
Study instruments	
Family demographic.....	168
Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA).....	175
Family Assessment Device (FAD).....	189
Attitudes Toward Child Rearing Scale (ATCRS).....	197
Children’s self-administered physical activity checklist (SAPAC).....	205
Food Frequency Questionnaire (FFQ).....	209
The Schoolagers’ Coping Strategies Inventory (SCSI).....	215
<u>Appendix 3</u>	
MET values for physical activities on SAPAC.....	220



## CHAPTER ONE

### Introduction

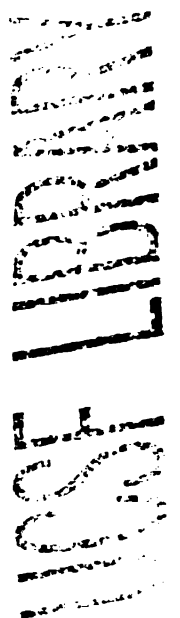
In 1998, the World Health Organization designated obesity as a global epidemic (World Health Organization, 1998). The epidemic is a result of societal and environmental factors that promote weight gain and is increasing in both industrialized and developing countries, including the U.S. and Taiwan (Hill, & Peter, 1998; Chu, 2001). Taiwan has undergone rapid growth in industrial and economic trade in the past three decades. The movement of industrialization, westernization, and economic affluence has changed Chinese society and family structures in Taiwan (Chu, 2001). The economic affluence also has caused some health problems in both adults and children. One of the health problems is childhood obesity (Chen, 1997; Peng, Chang, Kuo, Liu, Kuo, & Lin, 1999).

The prevalence of childhood obesity has increased significantly in the past decade in industrialized and westernized countries, and Taiwan and the United States are facing this epidemic problem (Chu, 2001). Due to the difficulty of controlling obesity in adults and the many long-term adverse effects of childhood obesity, the prevention of childhood obesity has been recognized as a public health priority (Wang, 2001). Numerous research projects and studies have been conducted to promote children's health and health behavior, including increasing physical activity, reducing sedentary behavior, and decreasing obesity (Chen, 1997; Kennedy, 2000; Kennedy & Lipsitt, 1998; Robinson, 1999). The most recent published government agenda, Healthy People 2010: National Health Promotion and Disease Prevention, targeted children and their families to promote

the children's health. Children and adolescents have been identified as a national healthcare priority in the Federal Agenda for Healthy People 2010.

Many objectives were identified in the Healthy People 2010. These objectives include improving environmental health, preventing violence, increasing nutritional and physical activity levels, and decreasing childhood obesity. Childhood obesity has been identified as an epidemiological issue with more and more children identified as obese in many ethnic groups, including African-Americans, Hispanics, and Chinese-Americans (Mei, Scanlon, Grummer-Strawn, Freedman, Yip, & Trowbridge, 1998).

A nationwide surveillance, Diet and Nutrition Survey in Taiwan (DNSIT), 1986-1988, found that the prevalence of obesity had reached 17.4% in children and adolescents. According to the most recent Nutrition and Health Surveillance in Taiwan (NAHSIT), 1993-1996, the prevalence of childhood obesity was 22%. Compared with Hong Kong, where socioeconomic conditions are similar to conditions in Taiwan, children in Taiwan had a higher prevalence rate of obesity (22% versus 10.5%). Data indicate that childhood obesity has become a health issue challenging healthcare providers in most industrialized countries. Childhood obesity is an important health issue affecting not only Chinese children in Taiwan but also Chinese-American children in the U.S. The most recent data indicate that Chinese-American children have the largest and most significant changes in the prevalence of obesity for children born in the second and third generation compared with the first generation in all other Asian ethnic groups, with an increase from 11.6% to 27.2%. As a result, children in Taiwan and in the U.S. are facing obesity as one of the major health problems.



The impact of obesity on health has been reported in several studies. Studies have shown that adulthood obesity is a risk factor for coronary disease (Gillman & Ellison, 1993; Bao, Strinivasan, & Berenson, 1996). Obesity in childhood also suggests a broad range of later health problems, including an increased risk of cardiovascular morbidity and mortality. Some of these health consequences that occur later in life, including cardiovascular diseases, are independent of adult weight (Must, Jacques, Dallal, Bajema, & Dietz, 1992; Power, Lake, & Cole, 1997). Childhood obesity increases the risk of coronary heart disease as well as impairment of vascular functioning (Berenson, Srinivasan, Wattigney, & Harsha, 1993).

Almost one-quarter of children in Taiwan and the United States are currently obese, a dramatic increase of over 20% in the past decade. Excessive body weight is one of the most prevalent medical and health problems facing society today. Prevention of childhood obesity is more effective than any treatment of the condition. Because the gene pool has not changed substantially in the last 10 years, the rapid increases in obesity must reflect familial and environmental changes, such as eating patterns and physical activity levels. However, factors contributing to excessive weight gain have not been entirely investigated, especially in Chinese children in Taiwan and in the United States. Understanding factors related to these differential rates of childhood obesity in Taiwan and the United States can help clinicians and researchers in both countries develop effective and cultural-specific prevention intervention programs to prevent obesity and improve children's health.

This dissertation study aim is to understand associations among familial factors, children's health behaviors, and childhood obesity in Chinese-American children and

Chinese children in Taiwan. Despite the fact that the family is an important factor in children's health, little is known about how family functioning is associated with being overweight and the levels of physical activity and dietary behaviors in obese and normal weight children. Moreover, the extent to which children's physical activity and dietary behaviors are related to obesity is not clearly defined, as studies have shown controversial results (Mei et al, 1998; Roberts, 2000; Saris, 1986) on the relationship between children's physical activity, dietary behaviors, and obesity in Chinese children in Taiwan and in the United States. The following section analyzes current research on potential factors related to childhood obesity.

#### Statement of the problem

##### *Prevalence of childhood obesity*

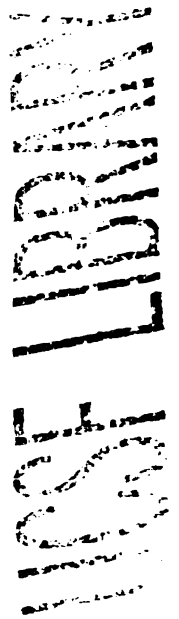
It is estimated that one third of the total population in Taiwan, approximately seven million, are children under 18 years of age (Peng et al, 1999). Owing to the rapid changes in food supply and dietary pattern, the children in Taiwan have shown a significant increase in stature and body mass. The prevalence of obesity has become an important issue in children's health. In 1970, only 2% of school-age children in urban areas and 0.5% in rural areas were defined as obese based on a threshold of over 20% of ideal body weight in Taiwan (Peng et al, 1999). A nationwide surveillance, Diet and Nutrition Survey in Taiwan (DNSIT), 1986-1988, found that the prevalence of obesity had reached 17.4% in children and adolescents (Huang, Lin, & Tung, 1992).

The prevalence of obesity has increased not only in Taiwan but also in the United States. Data from the most recent Third National Health and Nutrition Examination Survey (NHANES III) in the U.S. indicated that 14% of children and 12% of adolescents

are overweight, as defined by criteria of body mass index (BMI) greater than or equal to the 85<sup>th</sup> percentile. The prevalence of overweight increased from 12% in 1991 to 17.9% in 1995. Obesity is increasing even among young children in the United States. The number of obese young children under five years of age increased from 18.6% to 21.6% from 1988 to 1995 (Mei et al, 1998).

According to a 2000 Census estimate, 11.5% of California residents and 33.4% of residents in San Francisco are Asian/Pacific Islanders (RAND California, 2000). These data indicate the U.S. is becoming an increasingly pluralistic society, and San Francisco is one of the cities experiencing the plurality. However, health problems of Chinese-American children have not been fully examined. The most recent data indicate that Chinese-American children have the largest and most significant changes in the prevalence of obesity for children born in the second and third generation, compared with the first generation in all other Asian ethnic groups, with an increase from 11.6% to 27.2% (Mei et al, 1998).

According to the Nutrition and Health Surveillance in Taiwan (NAHSIT), 1993-1996, the prevalence of childhood obesity was 22% based on body mass index (BMI) greater than the 75<sup>th</sup> percentile (Kao, Huang, Tzeng, et al, 1991). Compared with the most recent data, the prevalence of obesity in first-generation Chinese-American children was 11.6% based on BMI greater than the 85<sup>th</sup> percentile (Mei et al, 1998). Despite these remarkable and worrisome results, no study has examined factors attributed to Chinese and Chinese-American children's weight issues and the differences and commonality in these potential factors between Taiwan and the U.S. Examining these factors can help improve children's health and health issues related to being overweight.



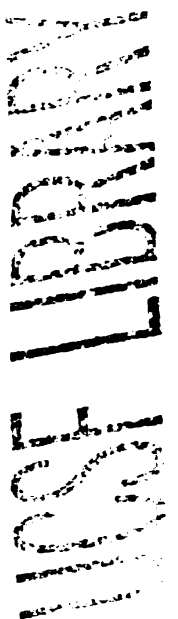


### *Impact of childhood obesity on health*

Substantial evidence has indicated that several physical and psychosocial health problems are associated with childhood obesity, including cardiovascular diseases, sleep disorders, type II diabetes, and mental health problems such as low self-esteem and social withdrawal (Barlow & Dietz, 1998; Hayman, Meininger, Coates, & Gallagher, 1995; Young, Dean, Flett, & Wood-Steiman, 2000).

Many obesity-related conditions (such as type II diabetes), which previously have only been seen in adults, are now being seen in children (Cook & Hurley, 1998). Children whose BMI is equal to or greater than 95% are more likely to be obese as adults (Power, Lake & Cole, 1997; Serdula, Ivery, Coates, Freedman, Williamson, & Byers, 1993). Studies have shown obesity in adults to be related to cardiovascular diseases. In addition, studies also have demonstrated that obesity in children is related to coronary heart diseases, dyslipidemia, hypertension, and autonomic dysfunction (Gortmaker, Must, Perrin, Sobol, & Dietz, 1993; Gunnell, Frankel, Nanchahal, Peters, & Smith, 1998). Thus, the development of obesity in childhood is a major determinant of cardiovascular diseases. Additionally, the costs related to medical management and lost productivity attributed to obesity in children and adults was about \$99 billion in 1995 (Wolf & Colditz, 1998). Thus, childhood obesity not only affects children's psychological, psychosocial, and physical health, but it also increases the societal health cost for treating these problems.

Due to the persistence of obesity into adulthood, its resistance to treatment, and its health negative consequences, understanding the determinants of adiposity in childhood is critical in preventing the onset of obesity. The school-age stage (6 to 12 years) is an

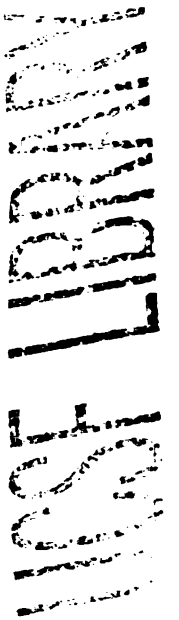


important period for influencing children's developing health behaviors and establishing healthier lifestyles and behaviors. Hence, examining factors associated with childhood obesity in school-age children is essential in developing childhood obesity prevention and intervention programs that can provide long-term effects. Studies have found three major factors and one potential factor related to childhood obesity: familial factors, children's dietary behavior, children's physical activity, and children's coping strategies, respectively.

*Factors associated with childhood obesity*

Childhood is a critical period for the development of health-promoting behaviors that are inextricably linked across the life span. Health promotion in children has been a major goal and objective in nursing. Several studies have been conducted to examine factors associated with children's health and health behaviors in the past two decades (Goetz & Caron, 1999; Kennedy, 2000; Sallis, Patterson, McKenzie, & Nader, 1988). One very important modifier of children's health attitudes and behaviors is the family.

*Familial factors.* The family is recognized as the most important institution in most cultures throughout the world. Despite radical changes in family structure and function during the past decade, family health beliefs and practices continue to be important and significant factors contributing to a child's health and behaviors (Gilliss, 1983; Lee, 1989). A child's health and behaviors are influenced by and learned from the family into which she/he has been socialized. Thus, family plays an important role in moderating a child's health attitudes and behaviors such as exercise and eating, which have been shown to be associated with obesity. Although children's health status is the result of an interaction of biological, social, familial, and environmental factors, an



understanding of the social and environmental context in which children live is an essential factor of any model of childhood health.

Research on family systems has shown support of a relationship between childhood obesity and health behaviors of the family. For example, low household income is a significant predictor of childhood obesity development (Garrett, Ng'andu, & Ferron, 1994). Home environment factors, socioeconomic status (SES), and education levels of parents also influence and are inversely related to children's body composition (Strauss, & Knight, 1999). These studies indicated a negative association ( $r = -.23$ ) between family environment, including SES, income, education levels, and childhood obesity development. Associations between poor family environment and childhood obesity also could be due to limited abilities and knowledge in terms of the behavior of purchasing healthy food products (Chen & Kennedy, 2001). This multiplicity of factors embedded in the family environment concept needs to be analyzed carefully. The link between family environment and child's weight issues, after controlling for SES, has not clearly been described and examined. Moreover, the extent to which family environment factors are related to weight problems in Chinese and Chinese-American children and whether there is a difference between children in Taiwan and in the U.S. is unclear. Understanding how family environment factors are related to childhood obesity in the target population can help in developing culturally sensitive and appropriate programs to promote children's health.

An aspect of family dynamics is parenting style. Studies have shown that some overweight children have a higher rate of being neglected by their parents (Christoffel, & Forsyth, 1989; Lissau-Lund-Sørensen & Sørensen, 1992). Many western culture studies

have also suggested that maternal control over child feeding is associated with the prevalence of childhood obesity ( $r=.18-.25$ ) (Fisher & Birch, 1999). Alternatively, constant feeding also can be attributed to parents' fear of scarcity, food insecurity, or malnutrition (Kennedy, 1998). One other familial factor related to obesity is family functioning. Literature has provided inconsistent findings on this type of relationship. Some studies have found a negative relationship between family functioning and children's weight and suggest that the better the family functioning, the lower the children's weight (Bains, Varni, Korsch, Jay, Adler, Garcia-Temple, & Negrete, 1988; Kinston, Loader, Miller, & Rein, 1988; Valtolina & Ragazzoni, 1995; Wilkins, Kendrick, Stitt, Stinett, & Hammarlund, 1998). Yet, other studies have found no association between family function and children's weight issues (Klesges, Haddock, Stein, & Klesges, 1992; Stradmeijer, Bosch, Koops, & Seidell, 2000; Valtolina & Marta, 1998).

Literature related to parenting, family functioning, and children's weight is inconsistent. Most studies have focused on western and middle-class families. No studies have been done on a Chinese and Chinese-American population. The extent to which parenting styles and family functioning affect childhood obesity has not been fully examined in this target population.

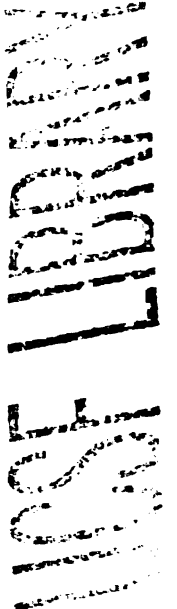
*Children's dietary behaviors.* A second important aspect of children's health behaviors is dietary behavior. Voluminous studies in the western culture have shown that consuming high-fat, high-density, and high-simple sugar foods is related to increased body mass in both children and adults ( $r=.15=.19$ ) (Duffy & Spence, 1993; Heini & Weinsier, 1997). In several studies, dietary interventions for reducing children's weight have shown promising results (Amador, Ramos, Morono, & Hermelo, 1990; Epstein,

Valoski, Koeske, & Wing, 1986; Epstein, et al, 1995). Therefore, reducing the intake of high-sugar/high-fat food products can decrease children's fat mass. One of the diet plans that has been used effectively is the traffic diet plan. Several studies using the traffic diet plan have demonstrated successful weight reduction in overweight and obese children (Duffy & Spence, 1998; Epstein et al, 1995; Valoski & Epstein, 1990).

The long-term effect of these interventions has been reported. Epstein and associates examined four family-based intervention outcomes over five and ten years and found that 34% of the study participants maintained their ideal body weight over ten years (Epstein, McCueley, Wing, & Valoski, 1990; Epstein, Valoski, Wing, & McCurley, 1994). This indicated a superior, successful intervention in treating childhood obesity compared with treating adults (10% of successful rate). Long-term changes related to specific diet, exercise programs, and family involvement after five to ten years of follow-up in obese status in children have been reported (Epstein et al, 1994; Epstein et al, 1990; Epstein et al, 1995).

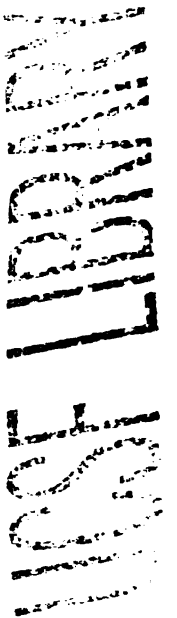
Conversely, other studies have indicated no relationship between children's food intake and their weight problems (Francis, Bope, MaWhinney, Czajka-Narins, & Alford, 1999; Gustafson-Larson & Terry, 1992; Maffies, Provera, Filippi, Sidoti, Schena, Pnelli, & Tato, 2000). Most research in this area has been done on middle-class and white Americans in the U.S. Although limited research has been conducted to examine how Chinese children's dietary behavior is related to their body composition, it is essential to examine this factor.

*Children's physical activity.* Physical activity and fitness is another priority area for the National Health Promotion and Disease prevention objectives for the year 2010.



Increasing body fat over the years has been related to decreased physical activity and increased television viewing (Roberts, 2000). Regular physical activity might decrease the prevalence of obesity, risk of death from cardiovascular diseases, diabetes, and high cholesterol. Moreover, physical activity could be an integral component of children's health behavior and obesity prevention.

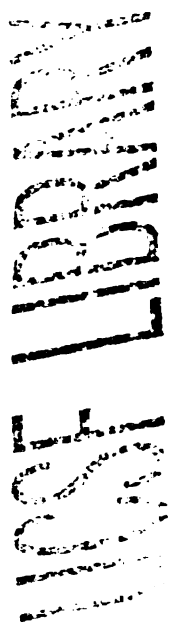
According to the physical activity guideline developed by U.S Department of Health and Human Service (1997), children more than six years old are encouraged to do moderate-intensity physical activity for at least 30 minutes for five days a week. For older children (age greater than 12) should perform 20 to 30 minutes of vigorous exercise at least three times a week. While approximately 20% of younger children (fourth graders) do not engage in the recommended amount of physical activity, level of physical activity decreases with age, especially for girls, with over 36% of children in ninth through twelfth grade not engaged in the recommended amount of physical activity (Wolf, Gortmaker, Cheung, Gray, David, Herzog, Graham, & Colditz, 1993). The decreased level of physical activities with increasing age and gender differences were found in several studies (Armstrong, 1998; Armstrong, Balding, Gentle, & Kirby, 1990; Armstrong, Welsman & Kirby, 2000). Armstrong (1998) examined children's physical activity patterns in children aged six to 15. He found that the majority of children accumulated a daily total of at least 30 minutes with heart rate greater than 139 bpm. However, there was a marked decline over the age range 10-14 years and boys had higher physical activity levels than girls at all ages. Another more recent study also indicated that children's physical activity level declines with age (about age 13) and boys spent



more time in physical activity than girls. Additionally, girls' physical activity declines more rapidly with age than boys' activity (Armstrong, Welsman & Kirby, 2000).

Asian children have been reported to have lower physical activity levels compared with Caucasian and African-American children (O'Loughlin, Paradis, Kishchuk, Barnett, & Renaud, 1999). This might be due to the value placed on the achievement of higher education in children in Asian cultures, and, as a result, these children spend more time studying than being active (Bond, 1998). Yet, these studies did not find the level of children's physical activity to be related to obesity in Asian Americans as well as in other ethnic groups. Levels of physical activity and inactivity in Chinese and Chinese-American children have not been carefully and widely examined. Contradictory results on the effects of level of physical activity and children's weight problems in Chinese and Chinese-American children call for further research in order to identify important factors contributing to children's overweight issues.

*Television viewing.* In addition to the knowledge of the effects of physical activity on childhood body composition, sedentary behaviors (especially increased television viewing time) have also been found to increase the risk of obesity and to decrease cardiovascular functioning. Gortmaker and colleagues (1996) examined the relationship between television viewing and obesity in 746 children ages 6 to 11 years old in 1986, with follow-up data in 1990. They found a strong relationship between the hours of television viewing and the prevalence of obesity. Excessive television viewing (more than 5 hours per day) attributed to 60% of overweight incidence in their study. These findings have been replicated in several recent studies (Andersen, Crespo, Bartlett, Cheskin, & Pratt, 1998; Epstein, Paluch, Gordy, & Dorn, 2000; Robinson, 1999). Several



intervention studies have also indicated that reducing television viewing is a good approach to preventing childhood obesity (Robinson, 1999; Robinson, Hammer, Killen, Kraemer, Wilson, Hayward, & Taylor, 1993; Wolf et al., 1993).

This relationship can be explained by three factors: (1) decreasing energy expenditure, (2) increasing food consumption during TV viewing, and (3) increasing requests for purchasing food products. American children watch approximately 27 hours of TV per week and see up to 20,000 advertisements per year (Lewis & Hill, 1998). Analysis of products advertised to children revealed that over two thirds of them were food related. Anywhere from 44% to 100% of these commercials were for foods high in fat, sugar, or salt. These food advertisements have been reported to increase children's demands for purchasing these products (Lewis & Hill, 1998). Thus, less than two hours of TV viewing per day is recommended as an important objective by Health People 2010. No studies have been reported on how many hours each day Chinese and Chinese-American children spend watching TV and studying. Lengthy TV viewing and studying time might be contributed to children's weight issues in the target population. Current research has not described or examined the relationship between television viewing and prevalence of obesity in Chinese children in Taiwan and Chinese-American children in the U.S.

*Children's coping strategies.* The other factor potentially related to childhood obesity is children's coping strategies. The literature on coping in children focuses primarily on stress or illness-related situations, such as how children cope with the stress of hospitalization. However, coping strategies used by healthy children indicated that children's perceptions of frequency and effectiveness of specific coping strategies

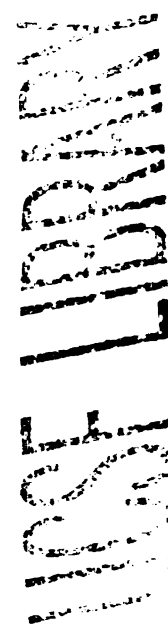


differed significantly based on race and gender. Important to this study is the finding that across this population children report television viewing (one sedentary behavior) as a preferred coping strategy (Ryan-Wenger & Copeland, 1994). How children cope with stressful situations, what coping strategies have been used, and whether coping strategies differ between obese and normal weight Chinese and Chinese-American children have not been explored or examined. The extent to which coping strategies used by children contributed to their weight problems needs to be considered.

*Conclusion.* Although it is well documented that the family has a significant impact on children's health behaviors and vice versa, family functioning facets (interactions between family members; communication; and parenting styles, including behavior control and parent-child interaction) have only begun to be examined in the pediatric obesity research arena. The inconsistent findings on children's health behaviors and their weight status suggest an important area to be examined, especially in Chinese children. It is important to examine whether these factors related to children's body composition and the degree to which family functioning affects children's health behaviors and the level of relationship to physical activity, dietary behavior, and body composition in the target population.

#### Purposes of the study

The purposes of this study are to: (1) profile the nature of family functioning and children's health practices in Chinese families from both Taiwan and the United States; (2) determine and compare the relationship between family functioning and the health practices of Chinese children in both countries; (3) determine and compare the relationship between children's coping strategies and their health practices including

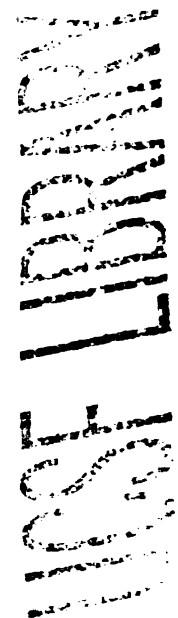


physical activity and dietary behaviors in both countries and (4) determine the degree to which family functioning and the health practices of children contribute to the Chinese child's body composition in both countries.

### Significance

The differences in the prevalence of obesity between Chinese children in Taiwan and children in the United States are multifactorial: Different definitions of obesity, various cut-off points for assessing obesity, and different dietary behavior and physical activity related to cultural practices are all possible factors. Despite various methods used in examining childhood obesity among these countries, children in Taiwan and in the U.S. are increasingly facing obesity as a major health problem. However, factors associated with Chinese children's body composition in Taiwan and in the U.S have not been examined systematically. The dramatic increase in the prevalence of overweight and low physical activity, especially in Chinese-American children, suggests a health problem that needs attention.

As childhood obesity is a critical health issue in both countries, understanding children's weight issues can help nurses improve assessment and management skills and help educators develop appropriate and effective care and teaching plans. Nursing research can identify factors related to childhood obesity and, hence, develop relevant and effective prevention and intervention strategies. With the support of scientific research, nursing can offer a holistic and evidence-based approach to address this issue. In addition, knowledge regarding children's body composition in Taiwan and in the U.S. can help researchers and clinicians gain insight into pediatric health problems and develop culturally appropriate health-promotion programs in both countries. This study



will establish a better understanding of factors associated with children's health behaviors. Understanding factors related to children's health and body composition can also help clinicians and researchers develop effective prevention intervention programs with culturally appropriateness to prevent childhood obesity and improve children's health.

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## CHAPTER TWO

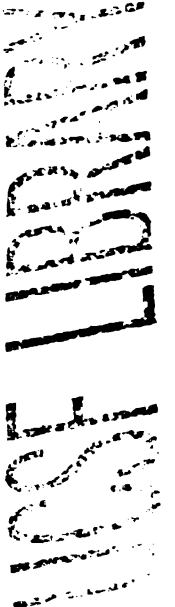
### Literature Review and Conceptual Framework

Although many factors, including genetics, contribute to childhood obesity, it has been suggested that three major factors (familial factors, children's dietary behavior, and children's physical activity) are related to obesity in children. This chapter is a synthesis of current research related to childhood obesity. Studies on childhood obesity interventions are also discussed in this chapter.

#### *Familial factors associated with childhood obesity*

Major areas of research on familial factors associated with childhood obesity are reviewed and critiqued in this section. These factors include the family environment and family functioning.

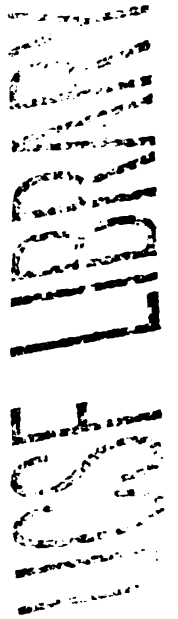
*Family environment.* Family environment factors related to childhood obesity have been rarely examined. Strauss and Knight (1999) investigated the association between home environment and the development of childhood obesity on Caucasian and Black children. Home environment was defined as the number of age- and developmentally appropriate toys in the home. A total of 2,913 normal weight children between the ages of 0 and 8 years were followed over a 6-year period. Results indicated that a home environment with little stimulation was a significant predictor of childhood obesity (OR: 2.64, CI: 1.48-4.70). A low-stimulating home environment slows children's cognitive development and increases the risk of obesity. Having fewer toys in the home was found to relate to higher obesity status. In addition, low household income was also a significant predictor of higher childhood obesity development in Caucasian and Black children (OR: 2.91, CI: 1.66-5.08). Other studies also support the idea that the home



environment is related to the development of childhood obesity (Garrett, Ng'andu, & Ferron, 1994; McCloyd, 1990). Specifically, a negative association between family environment, including socioeconomic status (SES), income, and education levels, and childhood obesity development was found. Lower SES and parental educational level have been found to increase the risk of childhood obesity in these studies. Low SES has been shown to relate to poor family environment due to the nature of economic disadvantage. However, these studies did not control for SES difference when they examined the family environment. Without controlling for SES differences, the findings that low environment stimulation is associated with childhood obesity should be interpreted with caution.

These associations between poorer family environment and childhood obesity could be due to limited abilities to purchase healthier food products, as they tend to be more expensive than unhealthy food products. Some low-income families may have less time to prepare healthier meals, as many parents may need to work for longer hours. Moreover, low-income families tend to have parents with lower education and limited knowledge regarding children's health. These confounding factors embedded in the family environment concept need to be analyzed carefully. In addition, how family environment factors contribute to childhood obesity, controlling for SES and education level, need to be examined.

There are no studies that have examined how family environment factors relate to children's weight problems in Chinese families in Taiwan or the U.S. Although Taiwan is a Westernized developed country, the family's SES is different between Chinese in Taiwan and Chinese in United States. Many Chinese immigrants moved to the U.S for a



better education and life and many of them were well-educated and wealthy (Bond, 1996). Therefore, the relationship between SES and children's body mass in the same ethnic group but different country might be different due to different SES levels. How this factor contributes to Chinese children's weight issues in either country is unclear and needs to be examined.

*Family Functioning.* One significant factor, family functioning, has seldom been examined in literature on obesity. Furthermore, in those that have examined obesity and family functioning inconsistent findings are noted. Six of nine studies reported a negative association between children's weight status and family functioning (Bains et al, 1988; Beck & Terry, 1985; Kinston, Lpader, & Miller, 1987; Kinston et al, 1988; Valtolina & Ragazzoni, 1995; Wilkins et al, 1998). Families in which obesity is prevalent have found higher rate of psychological dysfunction such as less family cohesion and more controlling dynamics (Stradmeijer et al, 2000). That is, the heavier the child, the poorer the family functioned.

Beck and Terry (1985), using the Family Environment Scale (FES), examined eight obese and eight nonobese Caucasian families whose children were between the ages of 8 and 12 years old. Their results indicated that obese children perceived their families' social and environmental characteristics more negatively than family members from normal-weight households. Obese children and their parents rated their family members as less committed to each other and less supportive (less cohesion), and they expressed greater anger and aggressiveness (greater conflict) than did nonobese families ( $t=3.21$ ,  $p<.003$ ;  $t=2.72$ ,  $p<.01$ , respectively). Obese families also reported less interest in social, intellectual, and cultural activities compared with nonobese families ( $t=2.84$ ,  $p<.008$ ).

19

Additionally, obese families reported less clear organization and structure in the planning of family activities and responsibilities than did nonobese families ( $t=2.96, p<.006$ ).

However, the small sample size limits the generalizability of these findings.

Other, more recent studies conducted by Wilkins and associates (1998) found similar results. Wilkins surveyed 115 fifth graders and 54 parents regarding family functioning and its relationship to the children's weight status. The Family Assessment Measure (FAM-III) was used to measure family functioning, with higher scores reflecting poorer family functioning. Results indicated that FAM-III scores were positively related to the children's BMI ( $r=.42, p<.05$ ). This means that the more dysfunctional the family, the higher the child's BMI. Moreover, obese families also reported higher scores in task accomplishment and control subscales than did normal-weight families, indicating poorer family functioning in these areas. This study pointed out that families with obese children functioned differently than families with normal-weight children.

The study results of Banis and associates (1988) also support the findings that families with obese children differ significantly from families in the non-distressed, normative sample in that they interacted in a more negative way across the areas of family psychosocial functioning, as measured by FES (cohesion, expressiveness, conflict, independence, active orientation, organization, and control domains). Three studies also found similar results (Kinston, Lpader, & Miller, 1987; Kinston et al., 1988; Valtolina & Ragazzoni, 1995). Possible explanations for these results include dysfunctional or poorly functioning families might be less likely to engage in family activities that could promote physical activity. Second, they might be less likely to help children to self-regulate their eating behaviors, as these parents might have higher control behaviors than parents of

families who function better. Finally, obese children might have excessive eating behaviors as a coping strategy to deal with the dysfunctional family situation.

Six studies found a negative relationship between family functioning and children's weight status ( $r = -.18$ -.42); however, three studies found no relationship between children's weight status and family functioning (Klesges et al, 1992; Stradmeijer et al, 2000; Valtolina & Marta, 1998). Klesges and associates (1992) examined 132 healthy white children ages three to six years old. Family functioning was assessed by the Family Relationship Index (FRI), and obesity was measured by the triceps skinfold on the right site of the body. Results revealed no relationship between family functioning and body fat of young children. Valtolina and Marta (1998) studied obese adolescents and their families. No difference was found between parents of obese adolescents and parents of normal-weight adolescents regarding family functioning. The most recent study done by Stradmeijer and associates (2000) examined 74 overweight and 70 normal-weight youngsters between the ages of 10 and 16 years old. These researchers also found no significant relationship between children's weight and family functioning.

Inconsistent findings could be due to small sample size, homogeneous sample (such as Caucasian families), various measurements (such as using either weight, fat mass, skinfolds, or BMI as determinants of obesity), and different ages of the children participating in studies. Since studies have shown inconsistent and controversial results concerning family functioning and obesity in children, this relationship needs to be re-examined, as certainly the family plays a crucial role in children's health. Moreover, what family functioning means in various cultures and to what degree family functioning



relates to childhood obesity in a particular culture needs to be investigated for meaningful health care in a pluralistic society.

In Chinese, the most common greeting expressed is “Have you eaten yet?” There is also a saying that “Having a good meal is more important than taking an Emperor’s order.” Children are told to finish their meals and are not allowed to talk while eating. As the nuclear dual-income family system has become a typical family structure and food has been an essential component in Chinese family daily life, understanding the extent to which family functioning influences the children’s nutritional intake and physical activity patterns and its relationship to childhood can help researchers and clinicians identify familial factors associated with children’s weight problems. Moreover, no study has examined family functioning and its relationship to weight issues in Chinese and Chinese-American children. Since Chinese family has its unique family structure and function, it is important to examine family functioning and how it relates to children’s health in the Chinese population.

#### *Children’s dietary behaviors*

Many children eat fewer than the recommended number of servings of green products, vegetables, and fruit (Crane, Hubbard, & Lewis, 1998). Most children consume high-fat and high-sugar food products, which leads to the increased risk of obesity. Additionally, studies have examined the association between food availability at home and childhood obesity (Birch & Fisher, 1998; Fisher & Birch, 1999). Results have indicated that food availability at home and parental eating behaviors or control behaviors are related to children’s eating behavior and obesity (Birch & Fisher, 1998). For example, if parents eat a lot of high-fat foods or have these products at home, the child tends to eat

high-fat foods. If parents exhibit strict eating habits or even dieting behaviors at home, the children, especially girls, tend to be on diets in early childhood. Parental control of children's eating habits also indicates a positive association with a greater risk of obesity in children. As parents' control increases during mealtimes, children's ability to regulate their food intake declines. Thus, children whose parents are highly controlling about nutritional issues are less able to self-regulate their food intake (Birsh & Fisher, 1998). Additionally, parents' restrictive behavior on allowing the children to consume snacks tends to backfire, as the child eats more snack foods when she/he is around these products. Therefore, setting up a healthy family environment with fruit and nutritious snacks and having clear rules about eating unhealthy food allows children to have access to healthy food and to learn to make healthier choices.

Fisher and Birch (1999) also supported the notion of positive relationships between access to food and childhood obesity and the negative relationship between knowledge of nutrition and obesity in Caucasian children. The greater amount of non-nutritional foods in the home and the less knowledge of nutrition that the family has, the more likely the child is to be obese. However, these studies had small sample sizes (N= 30-65) and a homogeneous ethnic group, typically Anglo-American. Moreover, most studies used questionnaires and did not report validity and reliability of the measures. These issues limited the generalizability of the results. No study has ever examined Chinese parenting and children's dietary behavior. Since Chinese and Chinese-American have different dietary behavior and nutritional practices than Caucasian or African American, understanding how the dietary behavior related to children's body mass in the target population can help clinicians and researchers to develop cultural appropriate

nutrition plan to improve health. Additionally, it is critical to examine the degree to which Chinese parents influence their children's health and dietary behaviors as children learn their eating habits within the family.

*Parental feeding practices.* An important factor related to young children's health is parental feeding practices. Several studies have examined the relationship between parental eating, feeding practices, and childhood obesity (Fisher & Birch, 1999; Gable & Lutz, 2000). Studies have examined parental feeding practice among families with infants, toddlers, young children, and middle school-age children in mostly Caucasian and some African American populations. The following section describes parental feeding practices and the effects of these practices on children's health.

Birch and associates (1981) examined relationships between the degree of children's fatness and mother-child interaction behaviors in an eating and non-eating situation among youngsters. There were 21 children ages from 44 to 81 months (white N=15 and black N=6) representing a range of socioeconomic background. Observational methods were used to measure mother-child interaction behaviors. Results indicated no relationship between demographic descriptions and children's weight status. However, mothers of thinner children tended to communicate more with their children in both situations compared with mothers of fatter children. Moreover, total comments and non-food comments were significantly more among the thinner children and their mothers. The fatter children and their mothers ate more food in less time than did the thinner children and their mothers. Results indicate differences in mother-child interaction styles that can be relevant to childhood obesity.

Although the interobserver reliabilities were 80% or greater in this study, the lab setting might alter the normal mother-child interactions and results might not present the true status. Additionally, how these comments were recorded during the observation was not clearly described in the study, and this threatens the study's internal validity and reliability. Small sample size also limits its generalizability.

Klesges and associates (1984) examined 30 preschoolers, ages 22 to 46 months, regarding the relationship between observed child mealtime behavior, physical activity measured by parents' reports, selected parent behaviors, and child's relative weight. All subjects were Caucasian, from lower- to middle-class two-parent families. Relative weight ranged from the 15th to the 99th percentile. Observational methods were used to measure both parents' and children's behaviors. Results indicated that parental encouragement to eat positively correlated both with the percent of time the children ate and with the children's relative weight. Moreover, parental encouragement to be active related positively to the children's levels of activity and negatively to the children's relative weight. Although this study had a small sample size and a homogeneous sample, which limits its generalizability, results pointed to the importance of parental behaviors during mealtime and their effect on the child's eating behavior and physical activity.

Another more recent study conducted by Gable and Lutz (2000) examined household, parent, and child contributions to childhood obesity in 65 parent-child pairs, children ages 3 to 10, using parent-completed surveys and children's BMI. These researchers found that a greater availability of sweets, chips, and salty snacks in the home was positively related to children's poor nutritional intake ( $r=.30, p<.05$ ). In a logistic regression model, parents of obese children also reported a greater tendency toward

inappropriate expectations of children's nutrition ( $\beta=.11$ ,  $p=.01$ ). For instance, parents of obese children were more likely to provide foods of low nutritional value and allow their obese children to have snacks between meals. Moreover, inadequate expectations were negatively associated with daily intake of food products in the home ( $r=-.27$ ,  $p<.05$ ). Parents whose nutritional knowledge was lower tended to have more unhealthy foods in the home. However, only 20% of the participants were classified as obese (child's BMI was at or above the 95<sup>th</sup> percentile). In addition, this study included primarily white, middle-class, and well-educated families and their children, which limited the external validity and generalizability of the results.

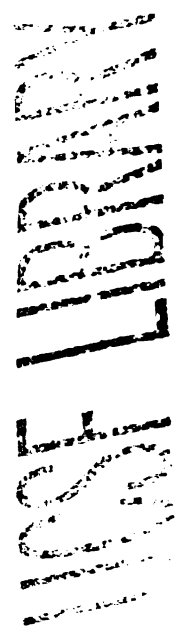
By age 7, children are clearly self-feeders and making choices. Saelens, Ernst, and Epstein (2000) examined the association between maternal child feeding practices and childhood obesity. Eighteen families with obese and nonobese children who were 7 to 12 years old were included in the study. Results indicated a significant difference between mothers' perceptions of their children's current weight status and regulatory eating habits between the obese and nonobese children ( $F(17,19)=3.90$ ,  $p<.003$ ). Additionally, maternal concerns regarding their own weight and their own eating habits were associated with maternal concerns about their children's weight and health ( $r=.83$ ,  $p<.001$ ). However, no difference was found in maternal control over child feeding in this study. These findings were not consistent with other studies, which indicated that maternal control over younger child feeding is related to children's weight status within families (Costanzo & Woody, 1985; Johnson & Birch, 1994). However, the generalizability of their study was limited to small sample sizes ( $N=18$ ) and an ethnic

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homogeneity (primarily white). Furthermore, the study did not explain what cues obese children gave to encourage their mothers to feed them.

Many studies have suggested that maternal control over child feeding is associated with the prevalence of childhood obesity ( $r=.17-.27$ ) (Costanzo & Woody, 1985; Gutting, Fisher, Grimm-Thomas, & Birch, 1999; Johnson & Birch, 1994; Klesges et al, 1984). Studies have found that restricting child's access to snack foods results in increased consumption of these foods when restriction is removed (Scatter, 1990; Scatter, 1996). For instance, Fisher and Birch (1999) found that maternal restriction of children's access to snack foods was related to girls', but not boys', consumption of those same foods in an unrestricted setting. In other words, girls tended to eat more in an unrestricted setting than boys did. However, Whitaket and associates (2000) found no relationship between maternal restraint scores and children's percentage of body fat. The discrepancy in results among studies could be due to small sample size and problematic measurement issues regarding food intake and parental control.

The association between parental eating habits and children's obesity is inconsistent and unclear. In addition, whether or not parental healthy nutritional practices encourage healthy eating patterns was not examined or explained. Moreover, most studies are limited to middle-class white families and small sample sizes ( $N=18-65$ ), which threaten the internal and external validity of these studies. More studies are needed to examine whether parental nutritional or food practices affect children's eating behaviors and how nutritional practices influence families' eating patterns and children's overweight problems in a more diverse population, such as in Hispanic, Chinese and



African American children as they have different dietary practices and the impact of this practice might be different than the Western society.

Research on familiar factors and children's dietary behaviors related to childhood obesity has differing and controversial results on the degree to which the factors influence children's weight status. However, many studies support the view that negative family factors, such as low SES, poor family functioning, poor parental feeding or dietary practices and behaviors are related to children's weight issues. Unfortunately, most studies were conducted in a middle-class white population. Investigating whether these factors affect the weight issues of Chinese and Chinese-American children is essential to creating successful prevention and intervention programs to decrease the prevalence of obesity and issues related to childhood obesity in the Chinese population.

#### *Physical activity*

Another important factor associated with childhood obesity is physical activity. However, children's physical activity levels decrease with age, and many children do not engage in the recommended moderate or vigorous physical activity of at least three days a week, as recommended by the Centers for Disease Control and Prevention and pediatric physical activity experts (CDC, 1996; Sallis, 1993). Seventy-three percent of sixth and seventh graders participated in vigorous physical activity (activity that causes heart rate greater than 159 bpm for at least 20 minutes), whereas only 72% of ninth graders and 55% of 12th graders engaged in this level of physical activity (Adams, Schoenborn, Mosses, Warren, & Kann, 1995; CDC, 1996). The physical activity in Chinese-American and Chinese children is described in the following section. Moreover, how children's

physical activity is associated with childhood obesity and the relationship between TV viewing and obesity are also presented in this section.

*Chinese children's physical activity.* Physical activity is an integral component of children's healthy behavior and obesity prevention. Studies have found that Asian children report lower physical activity levels compared with Caucasian and African-American children (O'Loughlin et al, 1999; Wolf et al, 1993). Wolf and associates (1993) examined the influence of ethnicity and age differences in terms of activity, inactivity, and obesity among a multiracial sample of 552 girls in grades five through 12. They found that Asians reported lower activity levels than did other ethnic groups ( $p < .01$ ). Also, less than 20% of either Asians or Hispanics met the year 2000 goal for strenuous physical activity (heart rate greater than 139 bpm for 30 minutes for at least three days a week). Paradoxically in Wolf's study, a child's physical activity level was positively associated with obesity ( $p < .001$ ). The more physically active the child was, the higher was his/her BMI (the fatter he/she is). However, only 4% of the participants were Asian (N=22), and 11% were Hispanics (N=61). Therefore, Wolf's study on Asian children might not represent the targeted population.

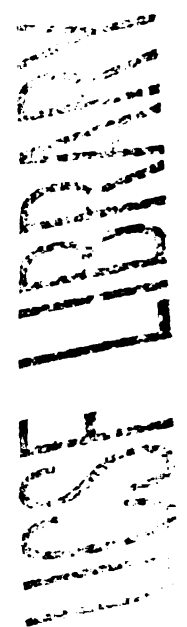
Another similar study was conducted in a lower-class and rural area in Canada (O'Loughlin et al, 1999). Data were collected from 1,178 students and comprised 182 Asian children, ages 9 to 13 years old, representing 15.7% of the total sample in the study. Results indicated a higher prevalence of inactivity among girls (24.4%) than boys (20.5%), and inactivity increased with age in both genders. Results also suggested lower physical activity levels reported by Asian children compared with other ethnic groups. However, Asian children also demonstrated a lower rate of obesity, as measured by the



BMI in this study. Although studies indicated low physical activity reported by Asian children as measured by self-report, the relationship between childhood obesity, children's physical activity, and factors associated with low physical activity was not examined in these studies. Further studies need to examine factors associated with children's low physical activity levels and their relationship to childhood obesity.

Additionally, it is not recommended to classify Asian children only into one broad group, as there are variations in different Asian groups such as Chinese, Japanese, or Korean children and their families. Studies should carefully categorize these children and families based on their self-identified ethnicity, not just race. Different cultures have different physical activities that children are encouraged to perform. For instance, Chinese children in Taiwan and the in U.S. are encouraged to play basketball, whereas Korean children are encouraged to play musical instruments and Japanese children are encouraged to play baseball. The different physical activity levels in different ethnic groups should not be categorized into one heterogeneous race group, as it mutes the variations.

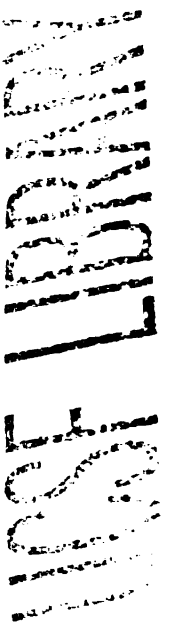
*Physical activity and obesity.* The relationship between physical activity and obesity is not consistent in the literature. Some studies show a negative relationship between a child's physical activity level and obesity. For instance, Berkey and associates (2000) examined the role of physical activity, inactivity, and dietary patterns on annual weight changes among 6,149 girls and 4,620 boys. They found a negative association between girls' physical activity levels and BMI changes in one year ( $\beta=-.03$ ,  $p=.046$ ). However, for boys, increased time in television viewing and video game playing (sedentary behaviors) was positively related to BMI changes in one year ( $\beta=.04$ ,  $p=.001$ ).



Several other studies support these findings regarding the negative association between levels of physical activity and childhood obesity (Davies, Gregory, & White, 1995; Goran, Hunter, Nagy, & Johnson, 1997; Roberts, 2000). Yet, some studies have also demonstrated that physical activity levels may not always be associated with childhood obesity (Saris, 1986; Waxman & Stunkard, 1980). Contradictory results could be due to different types of measurement and age groups, which define physical activity and obesity differently.

Although the results of studies on children's physical activity levels and childhood obesity are controversial and contradictory, some studies have suggested that parental physical activity level is associated with a child's physical activity level (Moore, Lombard, White, Campbell, Oliveria, & Ellison, 1990; Sallis et al, 1988). These studies suggest a theoretical mechanism for the relationship between a parents' and a child's activity levels; this mechanism includes role modeling function, common activities shared within the family, and encouragement. However, the mechanism through which parental physical activity level influences the child's physical activity level has not been investigated or examined.

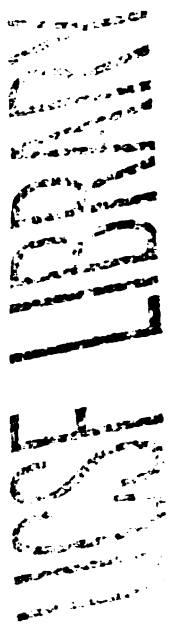
The studies reviewed here have shown both controversial and contradictory results regarding the relationship between physical activity and obesity. One reason for the discrepancies is the measurement issue related to physical activity. The operationalization and measurement of physical activity is not clearly defined in many studies, and they lacked data to support reliability or validity of their measurement tools, leading to potential threat to its validity to the studies. Despite these issues, these studies point to the importance of parental and familial influences on a child's physical activity



level. Findings of low physical activity levels in Asian children indicate an important area for further research. One of the critical issues related to low physical activity levels in Asian children could be due to cultural expectations of high academic achievement and/or a lack of knowledge of nutrition. Moreover, it is essential to examine Chinese children's physical activity in a larger sample size to capture the types and levels of activity in this ethnic group. There is also a need to examine the beliefs regarding the importance of children's physical activity levels in the Asian population, especially in the Chinese population, and explore the association between their beliefs and levels of children's physical activity and obesity.

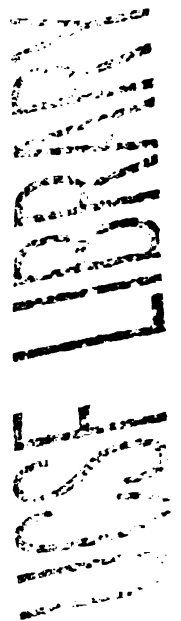
*Children's physical activity interventions.* Several interventions have been conducted to improve children's physical activity. The Cardiovascular Health in Children (CHIC) study is one of the early interventions to promote cardiovascular health in children by increasing children's physical activity level and was conducted by nurse researcher, Harrell and associates, in North Carolina (1996). The program was implemented in 12 schools, half in rural areas and half in urban areas. Children received a physical activity intervention three times a week, including a brief warm-up; 20 minutes of various fun, noncompetitive aerobic activities designed to impact major muscle groups; and a cool-down period. Baseline data were collected in the school, and post-test data were collected within two weeks of completion of the eight-week intervention. The intervention group consisted of 588 children ages 7 to 11 years old, and the control group consisted of 686 children ages 7 to 11 years old.

Results obtained in the intervention group supported a significant improvement in knowledge level and self-reported physical activity compared with those in the control



group. Post-test “healthy heart” knowledge scores for the intervention group were significantly higher than those for the control group. Children in the intervention group increased 23% from baseline to post-test in mean self-reported physical activity scores, whereas the control group only increased 15%. The intervention group also had a significant decrease in the cholesterol level from baseline to posttest in contrast to the control group. In addition, the intervention group had a significant decrease in the sum of triceps and subscapular skinfold compared with the control group. Although both groups showed small increases in BMI, no significant differences in the changes of BMI between the two groups were found.

The CHIC researchers also conducted a longitudinal study to examine the changes in both the activities and intensity of these activities from childhood (third grade) to adolescence (tenth grade) in 656 children (Bradley, McMurray, Harrell, Deng, 2000). The majority of children were Caucasians (83.4%), with 20.6% of children being black. Results indicated that children’s number of vigorous physical activities decreased with increasing grades ( $p < .001$ ). Girls tended to report more sedentary activities than vigorous activities in the beginning of grades seven and eight, whereas boys reported more sedentary activities beginning around grade eight. In addition, television viewing became more popular with boys, but not girls, as they aged. Results indicated that pubertal status was the only significant predictor of being active ( $p < .001$ ). Moreover, Caucasians were more likely than blacks to report vigorous activities ( $p = .005$ ). Possible explanations include higher income level in Caucasian families and have more access to exercise facilities than Black families.



Results of this study indicated a gender-, age-, and race-specific factors associated with physical activity levels. These differences could be the result of different societal expectations of gender-based activities, as girls tend to be taught to participate in quieter or less physically active activities compared with their male counterparts (Armstrong, 1998). Moreover, beliefs and values of physical activity may vary by ethnic groups. An age-, gender-, ethnic-, and developmentally appropriate intervention can improve the likelihood of successful programs.

However, the extent to which Chinese-American or Chinese children's physical activity patterns change over time has not been examined. The lack of this research prohibits healthcare providers and researchers from developing a specific program for these children. Chinese children have been viewed as quieter, less active, skinny, and not at risk for obesity than their counterparts. When academic achievement and success is viewed and valued as the priority in a child's life, a sensitive and culturally appropriate intervention is needed. Before successful interventions can be developed, more studies are needed to examine physical activity patterns in Chinese-American children. In addition, understanding to what extent changes in their physical activity patterns are associated with childhood obesity is crucial for developing a successful prevention intervention program.

#### *TV viewing*

In addition to the effects of physical activity on childhood obesity, sedentary behaviors (especially increased television viewing time) have also been suggested as increasing the risk of obesity and decreasing cardiovascular functioning (Andersen et al, 1998; Taras, Sallis, Patterson, Nader, & Nelson, 1989). The studies reviewed here only

address the idea that increased TV viewing time is equivalent to increased sedentary time as a factor contributing to childhood obesity. Research has established strong evidence that TV content, including a large number of food-related advertisements and commercials, has been shown to increase snacking behavior while watching TV. However, this particular area of literature is not reviewed in this chapter.

American children, ages 6 to 11 years old, watch an average of more than 23 hours of TV per week. The average high school graduate will likely spend 15,000 to 18,000 hours in front of a TV but only 12,000 hours in school (Strasburger, 1992). As American children spend more time watching TV than anything else except sleeping, TV viewing and its role in childhood obesity have begun to receive more attention in the past two decades. However, these studies have reported contradictory or inconsistent results.

*TV viewing and obesity.* Several studies have supported the belief that TV viewing could contribute to childhood obesity (Andersen et al, 1998; Dietz & Gortmaker, 1985; Klesges, Shelton, & Klesges, 1993). A recent longitudinal study conducted by Gortmaker and associates (1996) suggested TV viewing as a cause of increasing obesity. Data were collected in a nationally representative cohort of 746 youths, ages 10 to 15 years, in 1986 and 1990. Three ethnic groups were included in the analyses: 65% were white, 25% were black, and 10% were Hispanic. In this study, obesity was defined as a BMI more than the 85<sup>th</sup> percentile for age and gender. BMI data were collected in 1986 and 1990. Measurements of TV viewing were collected only in 1990. Parents and children were asked about the number of hours of TV viewing by the child during a typical weekday and a typical weekend day. The average of parents' reports and children's reports of TV viewing time was used for analysis. The mean age of the cohort

in 1990 was 11.5 years. The estimated prevalence of overweight was 29%. No significant differences were found among the three ethnic groups. The average amount of TV viewing in 1990 was 4.8 hours per day, or 34 hours per week.

A dose-response relationship with increasing TV viewing time was also found in this study. The odds of being overweight were 4.6 times greater for youths watching more than five hours of TV per day compared with those watching less than two hours. After controlling for baseline characteristics, including baseline overweight, ethnicity, maternal weight status, household income, maternal working status, and number of children in the household, the adjusted odds of being overweight were 5.3 times greater for children watching more than five hours of TV compared with those watching less than two hours. These odds ratios indicated a substantial dose-response relationship between TV viewing hours and being overweight. The incidence and remission of obesity during the four-year period were also examined. Logistic regression was used to predict the incidence and remission of obesity. The coefficient in the incidence equation indicated that the odds of becoming overweight increase 1.2 times for each additional hour of TV viewing per day. In addition, excessive television viewing (more than five hours per day) attributed to 60% of overweight incidence in their study. The coefficient in the remission equation indicated that the odds of remaining overweight increase 1.3 times for each additional hour of TV viewing per day. Results suggested that TV viewing time during childhood is positively related to the prevalence and incidence of being overweight, and negatively related to remission of obesity during this four-year period.

This study utilized parents' reports and adolescents' reports of TV viewing. This minimized the estimate errors of TV viewing time. The inability to examine the TV

viewing trends within the four years decreased the richness of the study, as this data would be helpful to explain whether increased TV viewing time truly causes obesity. However, a prospective longitudinal study can be very expensive and time consuming. Although the authors utilized a logistic regression model to predict overweight prevalence and remission, the lack of baseline data on TV viewing time in 1986 limited the possible causative explanations, which might help explain whether an increase in the TV viewing during the four-year period actually increased the prevalence of obesity. In 1986, adolescents who were already overweight might already have been watching more than five hours of TV. On the other hand, those who were overweight in 1990, but not in 1986, might watch less than two hours of TV. How the increased TV viewing time during the study period affected an adolescent's weight status might be more helpful in explaining the relationship between TV viewing time and obesity in children.

One more recent study conducted in 1988 and 1994 with 4,063, children ages 8 to 16 years old, indicated a positive relationship between increasing TV viewing time and increasing body fat and BMI (Andersen et al, 1998). Twenty-seven percent of children were non-Hispanic white, 36% were non-Hispanic black, and 37% were Mexican-American. This study examined the relationship between physical activity, TV watching, and children's body weight and fatness. Data were collected as part of the third National Health and Nutrition Examination Survey (NHANES III). The interview was conducted in the child's home, and a detailed clinical examination was performed in a mobile examination center. Children completed the seven days physical activity questionnaire and had their weight and height measured. Questions regarding number of hours of TV



watching the day before the interview were administered. The BMI and subscapular and suprailiac skinfold thickness were used as measurements of body composition.

Results supported aforementioned studies, indicating children watching more than four hours of TV each day had greater body fat ( $p < .001$ ) and a greater BMI ( $p < .001$ ) than those watching less than two hours of TV per day. In this study, 26% of children watched more than four hours of TV per day, and 67% watched two hours or more of TV per day. In addition, 20% of children participated in two or fewer vigorous activities (activity causes heart rate greater than 159 bpm) per week. Moreover, TV watching was more closely related to skinfolds and BMI than was vigorous activity ( $r = .21-.30$  versus  $r = .20-.26$ ). However, the correlations between TV viewing and skinfolds and BMI are low. No interaction was found between TV watching and physical activity. Significant effects on body fatness were seen for TV viewing but not for physical activity.

The study included large samples and over-sampling of black and Mexican-American children. However, relying on only one question to determine TV viewing time the day before the interview might not be sufficient to measure average TV viewing time, as children tend to stay indoors longer in the winter than in summer. Most studies did not report during which seasons they collected data. The lack of seasonal data might cause them to underestimate or overestimate children's TV viewing time.

Other studies also supported the positive relationship between TV viewing and childhood obesity ranged from .20-.30 (Gortmaker, Dietz, & Cheung, 1990; Robinson, Hammer, Killen, et al, 1993). Of five published reports on the significant relationship between TV viewing and obesity, four have limitations due to measurement design.

Mechanisms that increase TV watching and the associations between these mechanisms

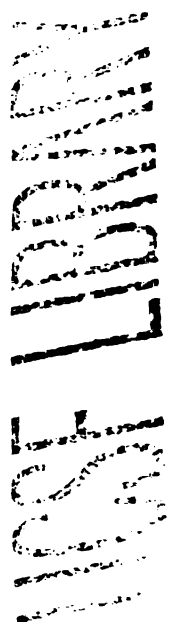
and childhood obesity were not examined. Did children who watch more TV snack more than those who watched less TV, or did children who watched a lot of TV have less energy expenditure than those who watched less TV? What else did these children do when they watched TV that might contribute to their obesity? These questions are important factors explaining why increased TV viewing raises the prevalence of obesity. One study that examined the effects of TV on children's metabolic rate in a laboratory setting (Klesges, Shelton, & Klesges, 1993) reported that their metabolic rates during TV viewing were significantly lower than during rest ( $p < .001$ ). This finding indicates that TV viewing has a profound effect on metabolic rate and may be a mechanism for the relationship between TV viewing time and childhood obesity. However, only 15 obese children and 16 normal-weight children were included in this study. Generalizability of the results might be questionable. More empirical studies are needed to verify the relationship between metabolic rate and TV viewing and how it could contribute to childhood obesity.

Although several studies indicated an association between TV viewing time and obesity, many studies also reported a weak or no correlation between TV viewing and obesity (DuRant, Baranowski, Johnson, & Thompson, 1994; Robinson et al, 1996; Shannon, Peacock, & Brown, 1991). Robinson and Killen examined the relationship between TV and obesity in 1995 with another sample of 1,912 ninth graders. Ethnic and gender differences were the focus of their study. The sample consisted of 34.7% Hispanic, 22% Asian/Pacific Islander, 22% white, 6.8% black, and 3.7% others, with 47.2% female and 52.8% male. Results indicated that boys reported more TV viewing than girls, except among blacks. Black children reported more TV viewing, more

physical activity, and eating more fatty foods than did the other children. TV viewing was only weakly associated with BMI. The only statistically significant association between TV viewing and BMI was among white boys ( $r=.22$ ,  $p<.002$ ). Total weekly TV viewing time was significantly related to dietary fat intake in the entire sample and for both genders. Overall, results indicated that TV viewing was not an important cause of adolescent obesity. However, TV viewing was associated with increased dietary fat intake, which might indirectly contribute to obesity. In addition, the findings of gender and ethnic differences suggest that cultural factors may influence the mechanisms of childhood obesity and TV viewing.

The lack of consistent, significant associations between TV viewing and obesity could be the result of invalid or unreliable measurements of TV viewing. Adolescents were asked to estimate separately, for a usual school day and a usual weekend day, the number of hours they spent watching TV, movies, and musical videos and playing computer games. They responded by circling an answer from zero hours to 12 hours or more. The weekday data were multiplied by five, and weekend data were multiplied by two. This method might introduce greater measurement errors, as adolescents tend to underestimate hours of TV viewing time.

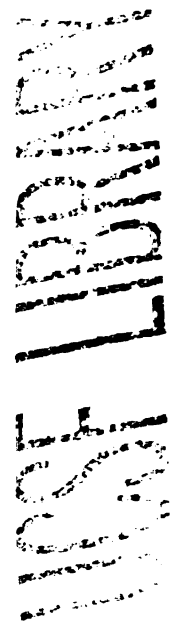
All of the aforementioned studies were based on self-report or data collected in laboratory settings, which might cause measurement errors and provide inaccurate results. A well design study was conducted by DuRant and associates in 1994. DuRant and associates (1994) examined the relationship among observed TV viewing time, observed physical activity level, and body composition among three- and four-year-old children. The sample consisted of 101 girls and 90 boys; 41.4% were black, 23% were



Hispanic, and 35.6% were white. Two research technicians arrived at the child's home around 7a.m. and observed the child for approximately 6 to 12 hours per day. Each child was observed on a given day by two observers who alternated in two-hour shifts throughout the day. The mean interobserver agreement was 84.1%.

No gender or ethnic differences in TV viewing time or physical activity during TV viewing were found. Results also did not support the proposal of a significant relationship between TV viewing and obesity as measured by BMI, skinfold thickness, and waist-to-hip ratio. However, TV viewing was negatively correlated to higher physical activity levels. A more recent study also supports the idea that there is no relationship between TV viewing and BMI in a multiple ethnic pediatric population (Dwyer, Stone, Yang, Feldman, Webber, Must, Perry, & Parcel, 1998).

The relationship between TV viewing time and childhood obesity is multifaceted and complicated. From reviewing ten articles in this section, five of ten studies reported a significant relationship between TV viewing time and obesity, whereas the other five indicated no relationship or a weak but not significant relationship. The inconsistent and controversial results and multivariables might contribute to different measures of TV viewing, varied definitions of obesity, and sampling bias, such as a homogeneous ethnic group. Other issues might be measurement errors occurring during data collection, such as low reliability on self-report and ceiling effects when researchers used observational methods. As TV is a part of children's life and has a profound impact on their health in Caucasian and Black American children, understanding how TV viewing impacts Chinese children can help clinicians and researchers to develop a culturally relevant health plan. Degree to which ethnicity and SES play a factor in TV viewing time and



children's weight issues as well as to what extent TV viewing contributes to childhood obesity in Chinese children needs to be examined in order to reveal if there are different pathways to outcomes that are ethnic specific. Thus, developmental appropriate and culturally sensitive prevention and intervention programs can be developed.

### *Childhood obesity interventions*

Numerous interventions have been done in the past two decades to help obese children reduce fat mass and maintain a healthy weight. Prevention intervention programs normally include increasing physical activity levels and education to improve nutritional habits (Epstein's work from 1980 -2002). More recently, decreasing sedentary behaviors, especially lessening TV viewing time, has been used as an innovative method to prevent and reduce the prevalence of obesity (Robinson's work from 1990 to 2002).

Traditionally, children have been seen as the target of change; however, parents being the target of change and the focus of the intervention have received more and more attention (Goran's work from 1995 to 2002).

More recently, studies have tended to utilize either family-based intervention programs or school-based prevention programs. Family-based intervention programs refer to interventions that treat already overweight and obese children, and their families were asked to participate in the interventions. School-based prevention programs refer to school-based programs that had weight maintenance as part of the interventions and both children who were of normal weight and who were overweight participated in the programs. Studies have indicated that family-based intervention programs could promote greater weight reduction as well as help maintain the weight loss longer than other interventions that involved only children, such as school-based prevention programs

(Epstein et al, 1990; Epstein et al, 2000). However, these family-based interventions may be more expensive and involve fewer numbers of children in treatment than school-based interventions. In addition, many interventions have looked at the immediate treatment effect in terms of weight control. With the exception of two studies (Epstein et al, 1990; Epstein et al, 1994), most interventions indicated short-term effects on weight control in children but failed to demonstrate long-term effects.

*Intervention studies.* Epstein and his associates examined four family-based intervention outcomes over five and ten years (Epstein et al., 1990; Epstein et al., 1994). They found that 34% of the participants maintained their ideal body weight over 10 years, indicating a superior and successful intervention in treating childhood obesity compared with adults (10% of successful rate). This supports the evidence of intervening in obesity issues and related problems in childhood. However, their interventions were conducted in the 1980s and may no longer be appropriate for today's lifestyles. Several studies have examined the effects of improving healthy dietary practices and increasing physical activity in obese children (Jelalian & Saelens, 1999). Other approaches included increasing physical activity and decreasing sedentary activities, especially TV viewing time (Epstein et al, 1995; Robinson et al, 1993; Robinson, 1999).

In 1995, Epstein and associates tested positive reinforcement to increase children's activities and decrease sedentary behaviors as an obesity-reduction approach. Children in one group were positively reinforced for decreasing the amount of time they engaged in sedentary activities, such as watching television and playing computer games. The results of this study indicated that children in the reduced TV viewing and video game playing group showed better changes in the percentage of overweight and

percentage of body fat than did children in a combination of diet and exercise or exercise only group. This supports the hypothesis that reducing access to TV as a specific type of sedentary behavior may be important in treating childhood obesity.

Using a randomized controlled school-based trial, Robinson (1999) also examined the effect of reducing television and videotape viewing and video game use on adiposity, physical activity, and dietary intake. Results indicated a significant decrease in BMI, triceps skinfold thickness, and waist-hip ratio in children in the intervention group. Changes in the intervention group were accompanied by a decrease in television viewing and meals eaten in front of the television. The study indicated that reducing television viewing was a good approach to preventing childhood obesity. Several intervention studies supported these findings (Robinson et al, 1993; Wolf et al., 1993). However, all of these studies have focused primarily on white middle-class children and their families. Future studies need to exam the amount of time that Chinese-American children spend watching TV and to what extent TV viewing affects Chinese-American children as studies have shown that Chinese children spent more time in studying and less active than other ethnic groups.

A study by Haddock and associates (1994) utilized a meta-analysis method to examine the treatment effects of childhood and adolescent obesity. Their analysis examined 41 treatment effects between control and treatment groups right after interventions were completed. They found that overall post-test treatment effects on obese children were about half a standard deviation ( $d=.56$ ) improved than on children in the control group. However, they only examined the effect size of the treatment immediately after intervention. Longitudinal intervention research is needed to re-

examine the effect of these interventions systematically in terms of long-term weight control.

*Meta-analysis on the effect of family-based and school-based interventions.* A meta-analysis was conducted to examine the effectiveness of intervention and prevention programs that help children maintain stable weight loss after six months of a program. A meta-analysis provides a systematic review method, allowing researchers to compute the effect size of an intervention study and then compare types of interventions based on their mean effect sizes. Using this approach, I have examined 11 published studies focusing on the long-term effects of family-based interventions and school-based prevention programs in treating school-age overweight children. The analysis helps in understanding the effect of family-based intervention programs and school-based preventions programs on school-age children in the 6-month and 12-month follow-up periods.

Studies that met the following criteria were included in this review: (a) children are between the ages of 6 and 13 years old; (b) data were contained in a published report; (c) results were published between 1990 and 2000; (d) participants were followed up for at least 6 months; (e) the studies provided sufficient outcome data to calculate an effect size; and (f) the studies were published in English. This review is based on the findings from eight family-based interventions and three school-based interventions (See Table 1).

The most commonly used outcome measurements were percent overweight for age, sex, and height (N=7, 64%), BMI (N=5, 45%), and skinfold index (N=3, 27%). All of these measurements were computed to generate an overall effect size for each measure. The mean effect sizes for each measure of each study were then computed based on a follow-up time of 6 and 12 months. Each study was coded into five categories,



including design, treatment type, outcome measure, and follow-up time. Homogeneity of these studies was examined using the Mann-Whitney test.

The mean age of the participants was 10 years old ( $SD=.89$ ). There was no difference in the mean ages between family-based and school-based interventions. There was variability in sample size in both family-based interventions ( $M=16$ ,  $SD=2.5$ ) and school-based interventions ( $M=71$ ,  $SD=29.7$ ). However, the Mann-Whitney U test indicated no difference between groups in terms of sample size mean rank.

In the six-month post-treatment period, children in the treatment group of family-based interventions demonstrated a mean effect size of  $-.96$  ( $SD=.13$ ), whereas those in the school-based intervention group showed a mean effect size of  $-.32$  ( $SD=.57$ ). This effect size of children in the family-based intervention group suggests that 83% of children in the six-month post-treatment period showed improved weight control compared with their baseline, whereas 63% of those in the school-based intervention group demonstrated improved weight control compared with their baseline.

In the 12-month post-treatment period, the family-based intervention group showed a mean effect size of  $-.42$  ( $SD=.57$ ), while the school-based intervention group indicated a mean effect size of  $-.06$  ( $SD=.12$ ). The effect size of children in the family-based intervention group indicates that 66% of children in the 12-month post-treatment period showed improved weight control compared with their baseline, while 52% of those in school-based intervention group demonstrated improved weight control compared with their baseline. The treatment effect sizes decreased over time in both groups. No difference in mean effect sizes between family-based and school-based interventions was found in either the six-month post-treatment period or the

12-month post-treatment period.

Although there was no significant difference in the effect sizes of interventions between family-based and school-based interventions, results suggest that the effect size of family-based interventions is higher than the mean effect size of school-based interventions in both the 6-month and 12-month post-treatment periods. While reviewing these intervention studies, I noticed that family-based interventions normally included heavier children in the treatment program compared with children in school-based interventions. In addition, family-based interventions often strongly encouraged parents to participate in the treatment program, which promoted healthy eating habits and physically active environments. Two family-based intervention studies examined the use of special diets to reduce children's weight. Participants included in these two studies were heavier than those in other family-based interventions that focused on exercise and healthy diets. Although their effect sizes were slightly higher than those of other family-based interventions, the difference was not statistically significant.

School-based interventions targeted children who were both normal weight and overweight. For instance, in Robinson's study (1999), children's mean BMI was 18.38, which is not defined as overweight. Children with normal weight had no need to lose weight, and they might not perceive the intervention to be helpful or necessary. On the other hand, family-based interventions normally focused on overweight children. Since the children were overweight, they were more likely to lose weight compared with normal-weight children.

In conclusion, family-based interventions were more effective than school-based interventions. However, the mean effect sizes decreased over time in both intervention

groups, suggesting a frustration in weight management and maintenance in both groups and types of children. An innovative and more effective approach in treating childhood obesity is urgently needed. However, a better understanding of factors associated with childhood obesity will help in developing a more efficient intervention.

### *Conclusion*

In conclusion, a variety of research reports have examined factors related to childhood obesity. Factors associated with childhood obesity included poor parental eating habits, low physical activity levels, high levels of sedentary behavior, having an overweight parent, poor family functioning, and poor parenting style. Regardless of the inconsistent results from these studies, the literature has suggested that parental health practices, including eating habits, physical habits, and beliefs, are important concepts and factors associated with childhood obesity.

In addition to the lack of research on parental health practices, there has been inadequate exploration of the effects of family functioning on childhood obesity. A few studies have examined family factors, including SES, parental education levels, and parenting styles among white middle-class families, which may contribute to childhood obesity. Family functioning has been an area of research interests as it has been shown to impact children's health in many Western studies. Since Chinese families have different family systems and definitions on health family functioning, it is important to understand how Chinese family function and to what extent it affects children's health. Thus, family functioning and children' body composition need to be examined more fully, especially in Chinese culture.

Furthermore, interventions associated with children's weight management have been examined in several studies. However, results of the meta-analysis indicate a need to re-evaluate these programs, as many of them do not demonstrate long-term positive outcomes in weight control, except for Epstein's 10-year follow-up studies that indicated his subjects had a 34% rate of successful weight maintenance. Additionally, most studies include primarily Caucasian children and their families. As the prevalence of childhood obesity has increased dramatically in the Chinese-American population, a culturally sensitive and appropriate intervention program is needed due to different health practices such as dietary behavior and physical activity. Understanding factors associated with childhood obesity in the Chinese and Chinese-American populations is critical to developing successful preventive interventions. For instance, examining Chinese-American children's physical activity patterns and sedentary behaviors associated with obesity can help healthcare providers and researchers to identify critical factors that contribute to obesity. To examine factors associated with childhood obesity, valid and reliable measures must be developed and tested.

From the review of empirical research, recurring limitations are related to problems in measurement. Developing and testing measurements of children's physical activity levels and TV viewing patterns are critical and essential to internal and external validity and reliability of research study. Choosing valid and reliable measures is as critical and important as developing the instruments. Studies need to test these measures and report their psychometric properties to ensure the accuracy of the study results. However, many of these empirical studies did not report their findings regarding measurement's psychometric properties.

The dramatic increase in the prevalence of overweight children, especially in Chinese and Chinese-American children, suggests this might be an epidemiological problem that needs attention. Early prevention, such as establishing healthy nutritional habits and regular exercise patterns in childhood, could prevent later problems associated with being overweight. However, a better knowledge of what constitutes or contributes to obesity in Chinese and Chinese-American children, low levels of physical activity, and amount of TV viewing need to be examined and understood before we can develop any interventions that will have a long-term effect on weight control in children. An understanding of factors associated with childhood obesity in Chinese and Chinese-American children can help researchers and clinicians develop culturally appropriate, gender-sensitive, and developmentally based interventions or educational programs to improve obese children and their families' physical and psychosocial well-being.

#### Conceptual or theoretical framework

The Family-Collaborative Ecosystemic Model (FEM), a biopsychosocial model that incorporates concepts of health from Eastern and Western cultures developed by Goetz and Caron in 1999, is used as a framework in this study (Goetz & Caron, 1999). The FEM was derived from family systems theory, family ecosystems theory, biopsychosocial theory, and the integration of both Eastern and Western philosophies of health. Family systems theory suggests a significant interaction between health behaviors of the child and his or her family. Based on FEM, childhood obesity has an impact on the entire *family* and its *function* and vice versa. Family ecosystem theory is also an essential component in FEM. It suggests that an important component in a child's health status and behavior as well as the interaction between individual and the environment.

According to FEM, levels of family *acculturation* impact the family system and the child's health (such as obesity). The biopsychosocial theory emphasizes the concept of seeing the whole person as an integrated and unified system rather than a predictable and regulate unit. One person's behavior cannot be simply predicted by one single physiological or psychological factor. In studying childhood obesity, one must consider the psychosocial influences of being overweight on children's development. For instance, the extent to which the child *cope*s with overweight issues might affect the child's health and well-being.

In the model, childhood obesity can be viewed as not being able to keep oneself in balance and harmony in a complex existence between a child's physical and psychological health and his/her interactions with the family and society (Goetz & Caron, 1999). The FEM supports a complex and multidirectional interaction between obesity and all of the levels of family systems, ecosystems, and biopsychosocial systems. Based on FEM, this study will operationalize and explore four major factors (family functioning, parenting styles, children's physical inactivity, and children dietary behavior) and their associations with children's body composition in Taiwan and in the U.S. One possible moderating or intervening factor (children's coping strategies) will be used to examine its relationships with children's physical inactivity and food preference. Figure 1 presents the study framework. In the framework, childhood obesity can be viewed as not being able to keep oneself in balance and harmony in a complex existence among the individual, family and the environment.

## Assumptions

Based on the FEM, three major assumptions are identified. First, familial factors, including family functioning (communication and interaction) and parenting styles, are negatively related to children's health behaviors (dietary behaviors and physical activity). It is postulated that poor family functioning and more restrictive parenting practices are related to higher relative weight status. Familial factors also contribute to children's relative weight status. Secondly, children's health practices, including dietary and activity behaviors, are negatively related to their relative weight status. Better dietary and activity behaviors are related to lower relative weight status. Furthermore, children's health practices also contribute to their relative weight status. Lastly, children's coping strategies are associated with their health practices, including dietary behaviors and physical activity. Less coping strategies used are related to higher relative weight status. This study also assumed that age and gender are not contributing to the differences in study variables. However, this assumption will be examined in the analysis.

## Research aims and research questions

Aim 1. To examine and compare the nature of family functioning and children's health practices in Chinese families from both Taiwan and the United States.

- a. What is the status of maternal acculturation, family communication, family interaction, parenting styles, children's dietary behavior, children's physical activity, and children's coping strategies in Chinese families in Taiwan and the U.S?
- b. Do family functioning and children's health practices differ between Taiwanese and Chinese American families?

**Aim 2. To determine the relationship between family functioning and the health practices of Chinese children.**

- a. Is more effective communication in the family related to better dietary behavior and greater physical activity for children in both countries?**
- b. Is more effective interaction in the family related to better dietary behavior and more physical activity for children in both countries?**
- c. Is authoritarian parenting related to poor dietary behavior and less physical activity for children in both countries?**

**Aim 3. To determine the relationship between children's coping strategies and their health practices.**

- a. Is increasing positive coping strategy use related to greater physical activity for children in both countries?**
- b. Is increasing positive coping strategy use related to better dietary behavior for children in both countries?**

**Aim 4. To determine the degree to which family functioning and the health practices of children contribute to a higher BMI.**

- a. Is more physical activity related to lower BMI in Chinese children in both countries?**
- b. Is poor dietary behavior related to higher BMI in Chinese children in both countries?**
- c. Is less effective family communication related to higher BMI in Chinese children in both countries?**
- d. Is less effective family interaction related to higher BMI in Chinese children in both countries?**
- e. Is authoritarian parenting related to higher BMI in Chinese children in both countries?**



f. What are the predictors of Chinese children's BMI in both countries?

#### Definition of terms

Children's body composition is defined and measured using a body mass index ("BMI", which is weight in kilograms divided in meters squared, expressed as  $\text{kg}/\text{m}^2$ ). Children's relative weight is defined as children's average BMI among age- and gender-specific strata of a group. Overweight is defined as BMI greater than 85th percentile, as determined by United States Centers for Disease Control and Prevention report (CDC, 2001).

Chinese and Chinese-American children are defined as children who self-define as being Chinese or having Chinese descents in Taiwan and United States. Mothers of Chinese and Chinese-American children are defined as the birth mothers as well as the primary caregivers. Physical activity is defined by the exercise intensity that a child performed in a day. Exercise intensity is expressed in multiples of the resting metabolic rate. Metabolic equivalence (MET), the resting metabolic rate and reflects the energy cost of activity. Dietary behavior is defined as the amount of high-fat and high- sugar foods the child consumed in three days. Effective communication is defined as the communication in the family is clear and direct. Effective family interaction is defined as family members responding to a range of situations with appropriate quality and quantity of emotion. Authoritarian parenting is defined as parents who use more control and are strict in parenting their child.

## CHAPTER THREE

### Research design

A cross-sectional study design was utilized to examine factors associated with Chinese and Chinese-American children's health and body composition. Upon approval from UCSF Committee on Human Research (CHR), children ages 8 to 10 years old (third through fifth graders), who self-identified as Chinese or of Chinese origin, and their mothers in Taiwan and in the U.S were invited to participate in this study.

### Description of research setting

#### *Taiwan*

In Taiwan, participants were recruited through Nan-Chang Elementary School, located in Kaohsiung, southern Taiwan. Taiwan has a population of 18,129,635. Kaohsiung is an urban city with a population of 1,494,475 people (8.24% of the total population). It is also the biggest industrial city in Taiwan. At the time of the study, the population density was 9,729 persons per km. There were approximately 3 persons per household. It is the highest population density city in Taiwan (Department of Statistics, Republic of China, 2001). According to a Kaohsiung city report (2001), 1.1% of the city population (5,371) were low-income families who had incomes of less than NT \$9,814 per person per month. Kaohsiung has slightly higher low-income prevalence than the overall Taiwan prevalence (1.1% vs. 0.88%). Most families in Kaohsiung are middle class and industrial working class families (Department of Statistics, Republic of China, 2001).

In 2000, there were 84 elementary schools, including 4,064 classes, in Kaohsiung. It is the law that children attend school until at least ninth grade. The majority of school-

age children attend public school located close to their homes. Due to the increasing size of dual-income families and limited time to prepare breakfast in the morning, children normally purchase their breakfast with their mothers or by themselves from street vendors on their way to school. Street vendors sell various types of breakfast, including milk, soymilk, sandwiches, dumplings, sesame pancakes, and steamed or fried rice. The price is fairly inexpensive (NT \$15 –30; US \$.50–1). It is common for children to purchase their own breakfasts from street vendors (Communication with Mr. Peng, academic director of Nan-Chang Elementary School, September, 2001). Elementary school starts at 8 a.m. and ends at 3:30 p.m. Children can participate in after-school programs for a small fee (NT \$1000; US \$30 per month) if they wish. However, the majority of children attending Nan-Chang Elementary School do not attend the after-school programs, as they go to private learning schools for other subjects that are not offered in their curriculum or remedial programs, such as English, advanced math and science, and drawing.

Nan-Chang Elementary School has 1721 students ages 6 to 11 years old. It is a government-managed elementary school with one principal, one director, and 76 certified teachers. Each grade consists of eight to nine classes, and each classroom consists of 30-35 students with 1.5 teachers. The total number of third through fifth graders was 845. Physical education (PE) class in grades three through five was scheduled for 45 minutes, three times per week. Various activities were designed for different classes and grades.

In addition to PE class, all students from first through sixth grade participated in the school lunch programs. The lunch menu is developed by school teachers. Students paid NT \$600 (US \$20) for 20 lunch meals per month. Lunch normally includes two

types of vegetables and one meat dish with rice. Vending machines are not allowed in the schools. However, students are allowed to bring food and drinks to school.

### *United States*

In the U.S., participants were recruited through two Chinese language schools located in the Bay area of San Francisco (one in San Francisco and one in San Mateo). The San Francisco Chinese school teaches Chinese language to children ages 5 to 18 years old. The class was scheduled on Saturday morning from 9 a.m. to noon. This school consists of 310 students. The San Mateo Chinese school also teaches Chinese language, including reading, writing and vocalizations, to children ages 5 to 18 years old. The classes were scheduled on Sunday mornings from 9 a.m. to noon. This school has 300 students. The majority of students in both schools were born in the U.S., and their parents had immigrated from Mainland China, Taiwan, Hong Kong, Malaysia, or Indonesia.

### Sample

#### *Human subjects assurance*

This study was approved by the University of California, San Francisco Committee on Human Research (See Appendix 1 for CHR approval letters). Schools that participated in the study also approved the process of the study. In Taiwan, three classes in grades three through five were randomly selected as potential research participants. In the U.S., all potential subjects from two Chinese schools were invited to participate in this study. The primary investigator (PI) described this study to potential students during their physical education class and gave them an introduction letter and research consent form to take home to their parents. Children of parents who were interested in the study returned the invitation letter with their names and contact information to the PI, who then

described the purpose and procedures of the study to the mothers of the children. Data were collected in Taiwan/Kaohsiung (ROC) as well as Bay area of San Francisco (CA). Invitation letters for participating in the study were sent out to 313 parents in Taiwan and 210 parents in the Bay area. There were 95 children and their mothers in Taiwan and 68 children and their mothers in Bay area participated in the study; responding rates were 30.4% and 32.4% respectively.

Potential risks of the study to the child or caregiver, the voluntary nature of the study, and confidentiality were discussed. Mothers who volunteered to participate in the study signed a consent form, while children provided verbal assent. All children in the selected classes in Taiwan had their body mass and stature measured with light clothes on and shoes off individually in a classroom. Chinese-American children whose mothers agreed to participate in the study had their body mass and stature measured in a classroom provided by schools. If a mother agreed to participate in the study and signed the consent form, an envelope with questionnaires to be filled out by the mother was given to the child to take home. Completed questionnaires were placed in a sealed envelope, given to the child, and then returned to the PI.

#### *Nature and size of sample*

According to Cohen (1976), a total sample size of 120 Chinese and Chinese-American children and their mothers (60 in each country) would be necessary for an effect size of .25 or higher, desired power of .80, and alpha level of .05 for a multiple linear regression, which would include seven covariates with a squared multiple correlation  $R^2$  of .25. A total sample of 163 children participated in this dissertation study.

### *Criteria for sample selection*

Selection criteria were that the children were between the ages of 8 and 10 years old, were of either normal weight or were overweight based on Center of Disease Control criteria (See Table 5), self-identified as Chinese or of Chinese origin, and were residents with their mothers either in Taiwan or in the U.S. Maternal inclusion criteria included self-identification as Chinese or of Chinese origin, ability to read either Chinese or English, and the ability to speak either Mandarin or English, and they had to be the primary caregiver of the child.

In this study, 95 children in Taiwan and 68 children in the Bay area were recruited. In Taiwan, 42 boys (44.2%) and 53 girls (55.8%) participated in the study. There were 31 eight-year-old children (32.6%), 33 nine-year-old children (34.7%), and 31 ten-year-old children (32.6%); of these children, 30 (31.6%) were overweight (BMI >85<sup>th</sup> percentile based on age and gender, CDC 2001). Nine children (29%) in the eight-year-old group, 10 children (32.3%) in nine-year-old group, and 11 children (33.3%) in the ten-year-old group were overweight. The average age of the mothers was 35.94 (SD = 3.91), and their average amount of education was 11.1 years (SD= 2.77). Eighty-nine mothers (93.7%) were married, four (4.1%) were divorced, one (1.1%) was single, and one (1.1%) was widowed (See Figure 2, 3, 4 and Table 4).

In the U.S., 31 boys (45.6%) and 37 girls (54.4%) participated in the study. The eight-year-old group consisted of 23 children (33.8%), the nine-year old group consisted of 23 children (33.8%), and the 10-year-old group consisted of 22 children (32.4%). There were 23 children (33.8%) classified as overweight based on their BMI greater than 85<sup>th</sup> percentile of the same age and gender group. Seven children (30.4%) were classified

as overweight in the eight-year-old group, whereas eight children (34.8%) in nine-year-old group and eight children (36.4%) in 10-year-old group were classified as overweight. The average age of the mothers was 42.09 (SD = 3.81), and their average amount of education was 13.43 years (SD= 4.16). Sixty-five mothers (95.6%) were married, two (2.9%) were widowed, and one (1.5%) was single. No mothers in the CA sample were divorced (See Figure 2, 3, 4 and Table 4).

#### Procedure

After signing the consent form, the mother filled out questionnaires at home. Mothers in Taiwan received questionnaires written in Chinese, whereas mothers in the U.S. had both English and Chinese versions available to them. In both countries, the school executive academic director and the Chinese Language School coordinators provided a classroom allowing the PI to interview children and their parents. If the mother decided to participate in the study, an envelope was provided to her by the PI. After completing the questionnaires, the mother placed the questionnaires in a sealed envelope and gave it to their child. The child returned the sealed envelope to the PI within two weeks of recruitment. The sealed envelopes had only a random identification number. The same method of data collection from mothers was performed in both countries.

Because of the large number of students in Nan-Chang Elementary School, three classes in each target grade (third through fifth, N=316) were randomly selected, and all students in the selected classes had their body mass and stature measured. Children's body mass and stature were measured with their school clothes on and shoes off in a private setting in the classroom. This was done during a physical education class as part

of routine assessment in Taiwan; in the U.S., children (N=68) whose parents agreed to participate in the study had their body mass and stature measured during recess time in the Chinese language schools. The standard procedure for measuring body mass and stature was the same for both countries. Stature was measured three times using a portable stadiometer. Body mass was measured three times using an electronic body mass scale (Measurement Concepts and Quick Medical, 2001). The mean measurements of stature and body mass were used to compute children's BMI.

In Taiwan, children were given a study invitation letter along with their body mass and stature reports to take home. Children whose parents agreed to participate in the study were then given an envelope with the consent form and questionnaires to be filled out by the mother. The children's questionnaires were administered on a group basis during a physical education class in Taiwan. An explanation of how to fill out the questionnaires was given orally and on paper. Data collection procedures in collecting children's data were slightly different due to different research settings in two countries. Studies have shown no difference in recording children's 24 hours dietary intake and physical activity between the same day interview and next day interview (Sallis et al, 1996). In Taiwan, children in the same grade got together in a lecture room provided by the school director on Monday, Tuesday, and Friday mornings and were asked to record what they did (type and intensity of activity) and ate during the previous day (Sunday, Monday, and Thursday). Before recording information in the diary, children were taught how to estimate time in minutes by using examples. For instance, in Taiwan, recess normally lasts for 10 minutes and physical education (PE) class lasts for 45 minutes. Children were also given chances to ask questions and reassured that their anonymity and



privacy would be protected. Each data collection, which included filling out the activity and food intake diary, took approximately 30 minutes.

In the U.S., potential study participants (N=170) in the San Francisco Chinese language school received an invitation letter via mail. Potential study participants (N=40) in the San Mateo Chinese school were introduced by school director and then approached by the PI. An invitation letter was given to potential participants. A returned envelope was mailed back to the PI if the parents agreed to participate in the study in both schools. After getting a signed consent form from the mother and assent from the child in the U.S., the child's body mass and stature were measured. Additionally, the PI explained how to fill out questionnaires; verbal and nonverbal cues were used to identify issues and problems and to provide clarification and encouragement. CA children recorded their dietary intake and activity questionnaires on Sunday, Monday and Thursday at home with the researcher provided a reminder phone calls on Sunday and Thursday.

CA mothers were given oral and written instructions on how to fill out questionnaires. Mothers were asked to return the questionnaires in the envelope provided by the PI within two weeks. A telephone call was made on Monday and Thursday to remind the child about the questionnaires as well as to answer any questions the child had. After completing data collection, Taiwanese participants received payment of US \$7 (NT \$200) as a thank you for their participation. U.S. participants received payment of US \$15 as a thank you for their participation. Payment was made upon completion of the questionnaires.

## Data collection methods

### *Techniques*

Questionnaires with established adequate and appropriate validity and reliability were used in this study (See Appendix 2 for study instruments) (Epstein, Bishop, & Levine, 1978; Must, Dallal, & Dietz, 1991; Sallis, Strikmiller, Harsha, & et al1996; Ryan-Wenger & Copeland, 1994; Sheu & Edmundson-Drane, 2001; Suinn, Ahuna, & Khoo, 1992). Instruments with no existing Chinese version that were answered by mothers and children were translated by the investigator; next, a group of mothers (one from Hong Kong, one from Mainland China, and one from Taiwan) who are bilingual were consulted for instrument validity testing. One adult instrument (Family demographic) and two child instruments (the Schoolagers' Coping Strategies Inventory [SCSI] and a revised 24-hour children self-administrated physical activity checklist [SAPAC]) were translated into Chinese. A pilot study done with three children and their mothers was performed to ensure instrument appropriateness and feasibility in using it in the target population. The pilot study indicated that the translated adult questionnaires were at about sixth-grade reading level, easy to understand, and appropriate for the target population (See Appendix 2 for study instruments).

In this study, mothers were given questionnaires to complete and asked to return the completed questionnaires within two weeks of enrollment. Children were asked to record their physical activity and dietary intake for two week days (Monday and Thursday) and one weekend day (Sunday). Body mass and stature were checked at the time of recruitment. The PI reviewed with each child and explained the process of recording her/his daily activity and food intake. Data were returned to the PI within one

week of recruitment. Detailed time and total time required in completing each questionnaire are presented in Table 2.

### *Instruments*

*Body mass index (BMI)*. Is an equation determined by body mass in kilograms divided by stature in meter squared ( $\text{kg}/\text{m}^2$ ). The BMI has an established association with stature and age among children and adolescents (Must, Dallal, & Dietz, 1991). The Bogalusa Heart Study suggests a medium correlation with both age and stature ( $r = .50 - .60$ ). The measurement validity of BMI has been reported by several studies (Chan, 1992; Freedman & Perry, 2000; Goran, 1998). Results indicate wide ranges of sensitivities, specificity, and misclassification. Sensitivity ranged from 29% to 88%, specificity ranged from 94% to 100%, predictive value ranged from 90% to 100%, and efficiency ranged from 85% to 100%.

Interobserver and intraobserver reliability for BMI measurements are much easier to establish; therefore, reliability of this measurement has increased. In this study, children had their body mass and stature measured with their light clothes on and shoes off individually in a classroom as a part of their physical education activity in Taiwan and in the U.S. The 214 Road Rod portable stadiometer was used to measure stature; it has an excellent graduation of  $1/8$  inch. (0.1 cm). The 840 Bella Digital Scale was used to measure body mass; it has a graduation of 0.2 lbs (100 grams). Children's body mass and stature were measured three times by the PI, and the means were used to calculate BMI (Measurement Concepts and Quick Medical, 2001). The scales were calibrated based on the instructions provided by the companies.

*Family demographic information.* Is collected using a modification of Kennedy's family demographic questionnaire (FD). This 31-item parent questionnaire has been used in multiple studies (Kennedy, 2000). Items include parent(s)' and child's age, race/ethnicity, parents' and grandparents' country of origin, years in the U.S., parental occupation(s), family and maternal income, educational level, types of residence, and relationships to people living with mother. It is written at a third-grade reading level and takes approximately 5 minutes to complete by the parent. Chinese FD was translated by the researcher and tested in a group of three bilingual Cantonese and Mandarin-speaking parents. Modifications were then made to achieve consensus according to the various comments that were received.

*Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA).* The SL-ASIA was used to examine levels of maternal acculturation in this study (Suinn, Ahuna, & Khoo, 1992; Shinn, Rickard-Figueroa, Lew, & Vigil, 1987). The SL-ASIA scale is a 21-item multiple choice questionnaire covering topics such as language (4 items), identity (4 items), friendships (4 items), behaviors (5 items), general and geographic background (3 items), and attitudes (1 items). Scores could range from a low of 1.00, indicative of low acculturation or higher Asian identity, to a high of 5.00, indicative of high acculturation or high Western identity. A person retaining a high Asian identity is one whose values, behaviors, preferences, and attitudes reflect those of a person with an Asian background. The scale also permits classification as "bicultural," indicating a person has adopted some Asian values, beliefs, and attitudes along with some Western values, beliefs, and attitudes. The score reflects an orthogonal and multidimensional perspective of acculturation.

Validity and a moderate to good reliability have also been reported. In a factor analysis for the Asian-American sample, the reading/writing/cultural preferences explained 41.5% of the variance; ethnic interaction explained 10.7% of the variance; generational identity explained 5.9% of the variance; affinity and pride explained 6.6% of the variance; and food preference explained 5% of the variance (Suinn et al, 1987; Suinn, Khoo, & Ahuna, 1995). Cronbach's alpha for the SL-ASIA was found to be .79 to .91 for Chinese-Americans. This questionnaire is available in Chinese and English. It is written at a fifth-grade reading level. It takes approximately 5-10 minutes for parents to complete. SL-ASIA was used to examine the acculturation level in Chinese-American families in Bay Area (N=68). The internal consistency was .80 in this dissertation study.

*Family Assessment Device (FAD)*. Is a 60-item, self-report questionnaire measuring six dimensions of family functioning based on the McMaster Model of Family Functioning (Epstein, Bishop, & Levine, 1978). The McMaster Model is based on systems, roles, and communication theories, and it evolved from work with nonclinical families. The main assumption of this model is that families can report healthy functioning in some dimensions while experiencing difficulties in other dimensions. Based on this assumption and on the McMaster Model of Family Functioning, six subscales were operationalized and developed. The six subscales include problem solving, communication, roles, affective responsiveness, affective involvement, and behavior control. Additionally, there is a 12-item general functioning scale used as a global assessment of general healthy of the family.

A 4-point Likert-type scale, ranging from strongly agree, agree, disagree, and strongly disagree, is utilized to evaluate a family member's perception of the family. The

score in each item ranges from 1 to 4, with 1 reflecting healthy functioning and 4 reflecting unhealthy functioning. An average score for each subscale is used to measure family functioning in a specific domain, such as problem solving. A higher average score indicates poor family functioning. An established Western cut-off score (ranging from 1.9 to 2.3) that identifies unhealthy family functioning in various areas was reported in a study by Kabakoff and associates (Kabakoff, Miller, Bishop et al, 1990).

The preliminary items for the FAD were developed from goal-attainment scaling point descriptions from outcome studies based on the McMaster Model of Family Functioning (Woodward, Santa, Lewiv et al, 1977; Woodward, Santa, Lewiv et al, 1978). Concurrent validity of the FAD was reported in several studies (Epstein et al, 1978; Kabacoff et al, 1990; Woodward et al, 1977). Validity scores ranged between 0.48 and 0.53, depending on the types of instruments used for the concurrent validity testing. The instruments included family satisfaction (Locke-Wallace Marital Adjustment Test), Family Unit Inventory (FUI) and the Family Adaptability and Cohesion Survey II FACES II (Akister, Meekings, & Stevenson-Hinde, 1993; Miller, Bishop, Epstein, & Keitner, 1995; Waller, Calam, & Slade, 1989).

In addition to its moderate to good validity, the FAD also indicated moderate to good reliabilities, ranging from 0.69 to 0.86 (McKay, Murphy, Rivinus et al, 1991; Miller et al, 1995). Test-retest reliabilities over one week ranged from 0.66 to 0.76 (Miller et al, 1995). This questionnaire is available in Chinese, and a current ongoing study (N=313) indicates a moderate to good internal consistency ( $r=.29-.74$ ) (Chen, Kennedy, Kools, et al, in review). The FAD has a seventh-grade or age 12 reading level and takes approximately 15 to 20 minutes to complete.

Some potential issues in using FAD in measuring Chinese family functioning needed to be examined carefully. Although the FAD has been used in several large studies with nonclinical families, the majority of these samples were Caucasian, middle-class families in the U.S. The results in these studies might not represent the target population. Thus, the use of the FAD with different ethnic and socioeconomic groups among nonpsychiatric populations would help in verifying the usefulness and appropriateness of the FAD in assessing family functioning in non-Caucasian families.

In this study, the internal consistency was .73 for problem solving, .72 for communication, .70 for roles, .69 for affective responses, .64 for affective involvement, .52 for behavior control, and .82 for general functioning. This is similar to the alphas reported by Kaboacoff's study in 1990 and Chen's report in 2002 (See Table 6).

*Attitudes Toward Child Rearing Scale (ATCRS)*. Is used to assess parental child-rearing attitudes. It was designed by Hinkle and associates (1980). The ATCRS includes two subscales: a 26-item authoritarian and a 14-item democratic subscale. The 40-item scale is responded to on a 5-point Likert-type scale, from strongly disagree (1) to strongly agree (5). A higher score indicates agreement toward an authoritarian attitude. A reversed in scoring (1=4, 2=3, 3=2, 4=1) was used to obtain democratic subscale. A mean score was then used to measure parenting attitudes. The questionnaire was used by Hinkle and associates in 1980. In Hinkle's study, the overall reliability was .91. However, the study did not specify the ethnic groups of the participants. Another, more recent study that used ATCRS in Chinese population was done by Wang and Phinney (1998). In Wang and Phinney, the ATCRS was translated into Chinese and translated back into English. The ATCRS has a moderate to good reliability, ranging from .77 to .90 for democratic and

authoritarian parenting subscale in Chinese mothers in the U.S. The scale also has a one-week test-retest reliability of .91. It takes approximately 10-15 minutes for parents to complete the survey. In this dissertation study, internal consistency was .85 for authoritarian, .53 for democratic and .75 for the total scale (See Table 6).

*Children self-administrated physical activity checklist (SAPAC).* It has been used and tested to examine children's physical activity (Sallis, Strikmiller, & Harsha, 1996). The SAPAC was initially developed by Sallis and associates (1988). The Cardiovascular Health in Children study (CHIC) used the modified SAPAC. The CHIC was conducted by nurse researcher, Harrell and associates, in North Carolina (1996). Children were asked to recall activities that occurred the previous day before school, during school, and after school. In the original questionnaire, there are 25 activities and two questions related to TV/video viewing and video/computer game time. Because research has indicated that Chinese children spend more time studying than do other ethnic groups (Bond, 1996), the PI added two questions, one for studying time and the other for remedial program time, at the end of the survey for this study. Thus, the SAPAC used in this study included a list of 25 activities and two questions related to TV and computer game playing time from the original questionnaire and two additional questions related to studying time and remedial program time developed by the PI.

*Processes of Chinese Translation.* Because no Chinese version was available in SAPAC, the PI translated the SAPAC into Chinese and pilot tested it in a group of children and their mothers who were Chinese-Americans and capable of reading both languages. The SAPAC translation was carefully and rigorously done by the PI. The original instrument was translated into Chinese by PI and validated by three Chinese-



American children, ages 8 to 11 years old, and their mothers. Modifications were made according to the comments that were received. Comments included Chinese sentences or words revision and provided examples following questions. Final wording was carefully examined to ensure clarity and accuracy of the items. Since the SAPAC included a list of activities that children normally perform and was simple and straightforward, no discrepancies during translation were found.

*SAPAC psychometric properties.* Children estimated the minutes they spent in each activity during three time periods: before school, during school, and after school. They also reported whether the activity caused them to “breathe hard or feel tired none, some, or most of the time.” According to the interview guidelines developed by Sallis’s research team, frequency and intensity of activities were scored only if they totaled 5 minutes or more in an intensity category for one point of the time. An estimated energy expenditure is computed based on the reported frequency and intensity. SAPAC provides a moderate criterion validity when it compared with heart rates ( $r = .57 - .75$ ) and a moderate one-week test-retest reliability ( $r = .60$ ) in a sample of fifth graders (10 years old). It also provides a weak to moderate content validity ( $r = .33$ ) (Sallis, Strikmiller, & Harsha, 1996).

In this study, the children were asked to describe a typical Monday, Thursday, and Sunday activity. Data collection processes were different in Taiwan and the U.S as the researcher was able to meet with children in Taiwan on a daily basis and children in the U.S on a weekly basis. In Taiwan, children met in an assigned classroom on Monday, Tuesday and Friday. Children in Taiwan were asked to report the previous day’s activity (Sunday, Monday and Thursday) in a group basis interview arrangement. CA children

were asked to record their activity in the evening of the day (Sunday, Monday and Thursday) and a follow-up phone call was made by the PI to ensure that the child understood how to fill out the SAPAC. The SAPAC included activities that have been reported more frequently as well as some items that measure inactivity (such as television viewing time, computer time, and studying time). The SAPAC takes approximately 10 minutes for children to complete.

*SAPAC data types.* According to Sallis and associates (1996), five types of data can be created: minutes in sedentary pursuits (sedentary activity minutes); number of activities reported; minutes of moderate to vigorous activities (minutes of MVPA, MVPA minutes); Physical activity MET score (MVPA METs) (minutes of activities x MET value); and Weighted activity MET score (weighted MVPA METs) (minutes of activity x MET value x intensity rating). MET is a multiple of resting metabolic rate and reflects the energy cost of activity. In Sallis's study, number of activities had lower correlations with objective measures (.28 with HR; .02 with accelerometer). Additionally, minutes of MVPA had higher correlations (.58 with HR; .30 with accelerometer) than number of activities. It is recommended to use "physical activity MET score" by Sallis.

This study used time in sedentary pursuits (sedentary activity minutes), minutes of moderate to vigorous activities (MVPA minutes), and physical activity MET score (MVPA METs) for analysis. In this study, three days record were averaged to obtain mean values for time spending in active activities, sedentary activities and MVPA METs values. An averaged time spent in doing moderate and vigorous physical activity (MVPA minutes) including a list of 21 activities including TV viewing, video/computer game playing, and studying and estimated energy expenditure (MVPA METs) were computed

based on Sallis' computation formula (See Appendix 3 for MET values for physical activities on SAPAC).

*Food Frequency Questionnaire (FFQ)*. This 50-item tool is used to assess Chinese children's dietary behaviors and preference patterns, which include culturally common foods that are high fat and/or high-density, low-nutrient sugar composition. The FFQ has been used to assess children's nutrition and dietary behavior in several national children's health research studies in Taiwan (Sheu & Edmundson-Drane, 2001). This instrument is based on common Taiwanese dietary foods identified from previous research (Sheu & Edmundson-Drane, 2001). The FFQ has a good internal consistency ( $r=.92$ ). Children were asked to record what they typically eat on Monday, Thursday, and Sunday. Children filled out the FFQ at the same time they filled out the SAPAC. Data collection processes were described in the previous paragraph. This instrument takes children approximately 10 minutes to complete. Internal consistency results were similar to Sheu's reports. Alphas' ranged from .80 to .92 in fat subscale, .72 to .76 in sugar subscale and .85 to .92 in total scale in this dissertation study (See Table 6).

*The Schoolagers' Coping Strategies Inventory (SCSI)*. It is a 26-item self-report instrument used in several western studies that measures the type, frequency, and effectiveness of the stress-coping strategies of children ages 8 to 12 years old (Ryan-Wenger & Copeland, 1994). Each child identifies a stressor, scores each coping strategy for frequency of use during stress, then for degree of helpfulness (effectiveness), both on a scale of zero to 3. Three scores are obtained: the frequency scale score, effectiveness scale score, and total SCSI. Construct validity has been supported by reports of significantly low coping scores among children with one or more stress-related

conditions compared with asymptomatic controls (Sharrer & Ryan-Weinger, 1991; Ryan-Weinger, 1994). A multitrait-multimethod matrix indicated divergent validity (Ryan-Weinger, 1990). In addition, adequate internal consistency ( $r=.79$ ) and test-retest reliability ( $r=.73$  to  $.82$ ) has been reported (Ryan-Wenger & Copeland, 1994).

Because of the lack of a Chinese version, the PI translated the SCSI into Chinese. The translation process was conducted the same way as the SAPAC. A pilot test suggested no problem in translating the questionnaire due to its simplicity and concrete description of the language. In this study, the internal consistency was  $.84$  for coping frequency subscale and  $.85$  for coping effectiveness subscale. These alphas were higher than Ryan-Weinger's study (1990) (See Table 6).

### *Statistical Analysis*

Cronbach's alpha was used to examine the internal consistency of the FAD, ATCRS, SL-ASIA, and SCSI, for the total sample. KR-20 was performed to test the reliability of the FFQ, which has dichotomous data. Chi square tests were performed for categorical data and independent t tests were used to compare scores of the FAD, ATCRS, SCSI, FFQ, and SAPAC across demographic variables including gender, age and site. Pearson correlation coefficients were used to examine the relationship between variables and children's BMI. Stepwise multiple linear regressions were performed on those variables of statistical significance obtained from the correlations matrix between study constructs. Country was entered into the model as the first step to control for its effect on children's body mass then significant variables found in the correlation coefficient matrix were entered at the second step. All statistical analyses were performed with SPSS 10 for Windows.

## CHAPTER FOUR

The goal of this study was to identify factors associated with children's body composition. Potential factors identified in the literature were examined. These factors included family function, parenting style, children's coping, children's eating behavior, and their activity levels. Differences in potential factors between families in Taiwan (ROC) and families in Bay Area (CA) were examined. Differences between gender and age were also examined to inspect any possible effects on independent variables. .

### Results

#### *Family Information and Demographic Characteristics*

Mothers were asked several questions about their age, education, occupation, marital status, and annual family income (See Figure 2). Data on the father's age, occupation, and education were also obtained from the families (See Table 4). In the total sample, the average child's age is 9.01 (SD=.82), the average mother's age is 38.59 (SD=4.92) and the average father's age is 42.10 (SD=5.91). The average time in school is 12.09 (SD=3.61) years for mothers and 12.56 (SD=3.65) years for fathers. The average child's BMI is 18.51 (SD=3.60). There were some differences in demographic information between ROC and CA.

Mothers and fathers in Bay area were older (mother's age  $M=42.09$ ,  $SD=3.81$ ,  $t=-9.9885$ ,  $p<.0001$ ; father's age  $=45.75$ ,  $SD=5.58$ ,  $t=7.97$ ,  $p<.0001$ ) and more educated (mother  $M=13.43$ ,  $SD=4.16$ ,  $t=-4.01$ ,  $p<.0001$ ; father  $M=13.94$ ;  $SD=4.07$ ,  $t=-3.83$ ,  $p<.0001$ ) than mothers and fathers in Taiwan (mother age  $M=35.94$ ,  $SD=3.91$ ; father age  $M=39.34$ ,  $SD=4.52$ ; mother's education  $M=11.1$ ,  $SD=2.77$ ; father's education  $M=11.62$ ,  $SD=3.01$ ) (See Table 4). The majority of mothers in Taiwan were housewives ( $N=40$ ,

42.1%) whereas only twenty-eight percent of mothers in Bay Areas were housewives (N=19). The majority of mothers who were employed worked as semi-skilled occupations (ROC= 26.4%; CA= 20.6%). In ROC, 7.4% of working mothers worked in secretarial positions, whereas 12% of CA mothers were also employed as secretaries. For father's occupation, 65.6% of fathers in ROC worked in semi-skill professions whereas 32.3% of fathers in CA worked at this level.

In both sites, the majority of the parents were married (ROC-93.7%; CA-95.6%). In ROC, 4.7 % of the family had annual income less than NT\$12,000 (low income) whereas 6.0% of the CA family had annual income less than US\$10,000. However, 34.8% of the family in ROC had annual income greater than NT\$85,000 (high income) while 44.8% of the family in CA had annual income greater than US\$40,000. In CA, the majority of mothers (50%) were born in ROC whereas 29.4% were born in Mainland China, 14.7% were born in Hong Kong and 3.9% were born in other Asian countries (e.g., Malaysia and Indonesia). The average year of immigration to the US was 16.35 (SD=6.64). Reasons for immigration included education (29.2%), marriage (27.1%), family reunion (18.8%), better quality of life (16.7%), and freedom (8.3%). One-Way ANOVA and Student-Newman-Keuls test (SNK) found no significant difference on maternal age, education, income, and immigration years among the three age groups of children (age 8, 9 and 10).

The total of 163 children included slightly more girls (55.4%) than boys (44.6%) in the study. In total sample, approximately one third of children were eight years old (N=54), one third were nine years old (N=54) and one third was ten years old (N=53). Both sites had similar proportions of age group children.

### *BMI and overweight*

The 85<sup>th</sup> percentile overweight cut-off BMI values based on gender were different between the two sites, especially for boys (See Table 5 for detail BMI cut-off values in both countries). Though ROC published research has used BMI greater than 75<sup>th</sup> percentile as the cut off point for identifying overweight in Taiwanese children, these data were similar to the US 85<sup>th</sup> percentile data. Thus this study chose to use US Center for Disease Control (CDC) published data and 85<sup>th</sup> percentile as the overweight classification points. The cut off points based on children's gender and age in both sites is presented in Table 5.

The average stature was 1.361 meter (SD=.09), average body mass was 35.16 kg (SD=10.21), and average BMI was 18.51 (SD=3.6) for the total sample. In the total sample, no difference was found in children's age, stature, body mass, and BMI between the two sites. The mean body mass, stature, and BMI for eight years old children were 28.72 kg (SD=5.94), 1.293 meter (SD=.61), and 17.08 (SD=2.65), respectively. The averaged body mass, stature and BMI were 34.86 kg (SD=8.59), 1.36 meter (SD=.72) and 18.46 (SD=3.24) for nine years old and 41.79 kg (SD=10.91), 1.43 meter (SD=.68) and 19.97 (SD=4.18) for ten years old, respectively. Figure 3 and 4 present the distribution of overweight by gender and age.

No difference was found on weight, height and BMI between boys and girls of eight years old in total sample. However, significant differences were found on weight and BMI between boys and girls of nine and ten years old in total sample. Nine years old boys were significant heavier (M=38.49 kg, SD=8.88) and had higher BMI (M=19.83, SD=3.22) than girls of the same age (weight: M=32.15 kg, SD=7.42; BMI: 17.45,

SD=2.91;  $t=2.856$ ,  $p=.006$ ,  $t=2.836$ ,  $p=.006$ , respectively). Boys of ten years old also had significant higher weight and BMI ( $M=44.827$ ,  $SD=12.87$ ;  $M=21.211$ ,  $SD=5.087$ , respectively) than girls of the same age ( $M=38.648$ ,  $SD=7.419$ ;  $M=18.679$ ,  $SD=2.478$ ;  $t=2.191$ ,  $p=.034$ ;  $t=2.361$ ,  $p=.023$ , respectively).

### *Overweight prevalence*

In total sample, 53 children (32.5%) were identified as overweight based on BMI greater than CDC recommended values while 110 children (67.5%) were normal weight. In Taiwan, 30 of children (31.6%) were classified as overweight whereas 23 of children (33.8%) in Bay area were classified as overweight. No statistically difference was found in the overweight prevalence between two countries ( $\chi^2=.09$ ,  $p=.87$ ).

*Age group.* There were 16 eight years old children (29.6%), 18 nine years old (33.3%), and 19 ten years old children (34.5%) identified as overweight. Nine eight years old children (29%) in ROC and seven eight years old children (30.4%) in Bay areas were identified as overweight. Ten nine years old children (32.3%) in ROC and eight nine years old children (34.8%) in Bay areas were overweight while 11 ten years old children (33.3%) in ROC and eight ten years old (36.5%) in Bay area were overweight. No significant difference was found in overweight prevalence in three age groups between ROC and CA (8 years old:  $\chi^2=.012$ ,  $p=.573$ ; 9 years old:  $\chi^2=.038$ ,  $p=.537$ ; 10 years old:  $\chi^2=.054$ ,  $p=.521$ ) (See Figure 3).

*Gender.* Among overweight children, 28 were boys (52.8%) and 25 were girls (47.2%). In ROC, 17 overweight children were boys whereas 13 overweight children were girls ( $\chi^2=2.758$ ,  $p=.075$ ). In CA, 11 overweight children were boys and 12





were girls (chi-square=.07,  $p=.496$ ). No significant difference was found in BMI as well as overweight prevalence between children's gender (See Figure 4).

### *Research questions*

Aim 1. To describe the nature of family functioning and children's health practices in Chinese families from both Taiwan and the United States.

*Research question 1a.* What is the status of maternal acculturation, family communication, family interaction, parenting styles, children's dietary behavior, physical activity, and coping in Chinese families in Taiwan and the U.S?

### *Maternal acculturation*

Suinn-Lew Acculturation scale (AS-ASIA) was used to examine the acculturation level in Chinese-American families in Bay area ( $N=68$ ). The internal consistency was .80 and the mean SL-ASIA was 2.02 ( $SD=3.5$ ) on a scale of 1 to 4 (See Table 6 and Table 7). Higher score reflects more western acculturation. No difference was found between boys and girls ( $t=-.160$ ,  $p=.873$ ) or among three age groups ( $F=.292$ ,  $p=.748$ ). According to Suinn, a mean score greater than two suggests an Asian-identity (low acculturation) while a mean score greater than two suggest a Western-identity (high acculturation). In CA mothers' report, 38 (55.9%) identified themselves as Asian identity whereas 30 (44.1%) identified themselves as western-identity. Mothers who were highly acculturated had lived in the US ( $M=17.27$  years,  $SD=6.84$ ) longer than those who have lower acculturation ( $M=14$ ,  $SD=5.52$ ;  $t=-3.489$ ,  $p=.001$ ). One-Way ANOVA found no difference on length of immigration and levels of acculturation among maternal birth countries. A Chi-square test was performed to examine the difference between children's overweight status (normal weight vs. overweight) and maternal acculturation (high vs.



low acculturation). Children whose mothers were low acculturated are more likely to be overweight than children whose mothers were highly acculturated (chi-square=.4.58,  $p=.032$ ).

### *Family functioning*

FAD was used to measure family functioning in six domains. For the total sample (N=163), the average scores were 1.96 (SD=.35) for problem solving, 2.11 (SD=.36) for communication, 2.31 (SD=.40) for roles, 2.12 (SD=.36) for affective responsiveness, 2.21 (SD=.41) for affective involvement, 2.20 (SD=.29) for behavior control, and 2.01 (SD=.37) for general functioning. A higher score indicates poor family function.

Although families in ROC reported higher scores in five out of seven subscales than families in Bay area, no statistical significance was found between two sites. Moreover, no significant difference was found between boys and girls and among three age groups.

### *Parenting styles*

ATCRS was used to examine parenting styles in terms of authoritarian and democratic. For the total sample (N=163), the mean score in authoritarian subscale was 1.97 (SD=.39), democratic subscale was 3.10 (.37), and total scale was 2.36 (SD=.25). A higher score reflects more authoritarian parenting styles. There was no difference in authoritarian, democratic, and total scale between the two sites ( $t=-1.193$ ,  $p=.234$ ;  $t=1.377$ ,  $p=.170$ ;  $t=-.378$ ,  $p=.706$ , respectively). Additionally, no difference was found between parents of boys and girls in terms of authoritarian, democratic, and total scale ( $t=-.309$ ,  $p=.757$ ;  $t=-.410$ ,  $p=.682$ ;  $t=-.222$ ,  $p=.824$ , respectively). No difference was found among three age groups ( $F=1.509$ ,  $p=.224$ ). High acculturated mothers reported higher authoritarian parenting subscale ( $M=2.1244$ ,  $SD=.297$ ) than low acculturated



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mothers ( $M=1.9137$ ,  $SD=.328$ ;  $t=-2.735$ ,  $p=.008$ ). However, no difference was found in democratic parenting subscale between two countries. High acculturated mothers also reported higher ATCRS mean score ( $M=2.4368$ ,  $SD=.1743$ ) than low acculturated mothers ( $M=2.3219$ ,  $SD=.2727$ ;  $t=-2.107$ ,  $p=.039$ ). Pearson correlation coefficient found a significant relationship between acculturation (SL-ASIA) and authoritarian parenting ( $r=.287$ ,  $p=.018$ ). No significant relationship was found between SL-ASIA and democratic subscale or SL-ASIA and ATCRS mean score.

### *Children's dietary behavior*

The FFQ was used to measure the frequency of high fat and high sugar food items that were consumed by the child. Children were instructed to record whether they consumed 50 food items that were commonly found in Chinese culture on three non-consecutive days (Monday, Thursday, and Sunday). The three days food amounts were added to obtain a total score for fat, sugar, and total scale. For the total sample, children reported consuming 17.66 ( $SD=16.81$ ) items in high-fat subscale, 12.52 ( $SD=10.19$ ) items in high-sugar subscale, and 30.17 ( $SD=24.39$ ) items in total scale. ROC children had higher scores than CA children for both fat and sugar, and overall total scales ( $t=4.339$ ,  $p<.0001$ ;  $t=3.761$ ,  $p<.0001$ ;  $t= 4.618$ ,  $p<.0001$ , respectively). T test found no difference between boys and girls and ANOVA also found no difference among three age groups in high-fat, high-sugar and overall total scales.

### *Children's physical activity*

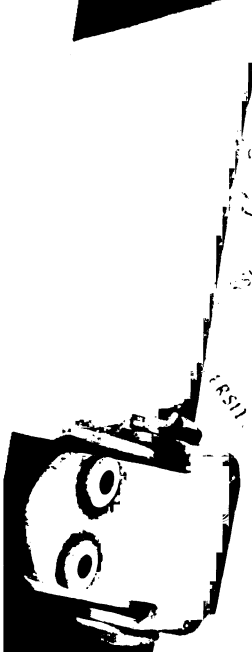
For the total sample, the mean METs was 511.31 ( $SD=506.04$ ) per day, mean time spent in moderate and vigorous activity was 92.31 minutes ( $SD=78.80$ ), approximately 1.5 hours per day, and average time in sedentary activity was 143.24

minutes (SD=125.02), approximately 2.3 hours per day. There was no difference in mean METs, mean activity time, and mean sedentary activity time between sites (See Table 7). Also, no difference was found between boys and girls. There was a statistical difference among three age group on MVPA METs ( $F=3.404$ ,  $p=.036$ ). Student-Newman-Keuls test (SNK) indicated that eight years old children had less MVPA METs than 10 years old children ( $p=.049$ ). However, the difference was very close if rounded ( $p=.05$ ). Thus, there was no difference among three age groups on MVPA METs scores.

### *Children's coping*

SCSI was used to examine the frequency and effectiveness of coping strategies children report. In the total sample, the mean frequency score was 24.67 (SD=10.50) and mean effectiveness score was 30.30 (SD=12.45). No difference was found between boys and girls in frequency and effectiveness measures. No difference was found among the three age groups in both subscales.

In item analysis, the most frequent coping strategies (top five coping strategies) reported by all children (N=163) were drawing, writing, and reading (85.3%), eat or drink (79%), watch TV (78.4%), play a game (78.4%), and do work around the house (76.1%). The most effective coping were (top five coping strategies) reported by all children were draw, write, and read (91.9%), do work around the house (90.5%), walk or run (87.4%), pray (87.2%), and try to relax (86.2%). One open-ended question asked children to identify the most distressing stressor they experienced. Approximately 53% of children (N=86) identified the their top stressor (ROC: 72.8%; CA: 25%). In both sites, school work was identified as the top stressor by children (ROC: 37.7%; CA: 29.4%).



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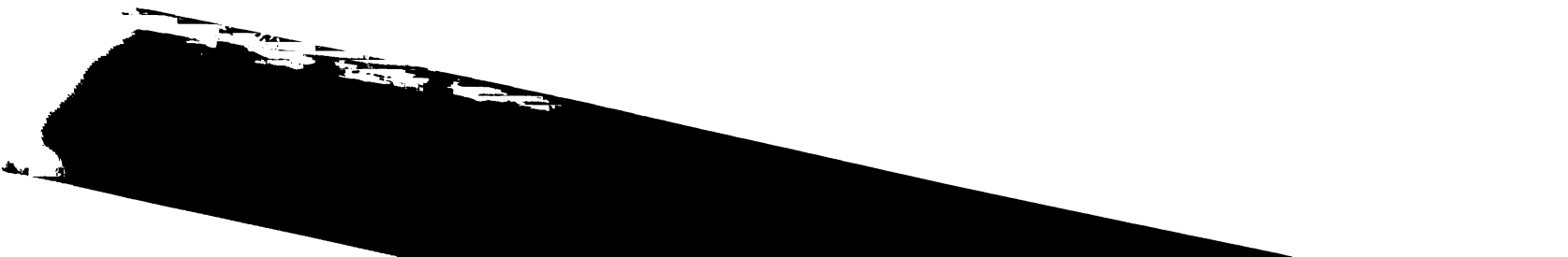
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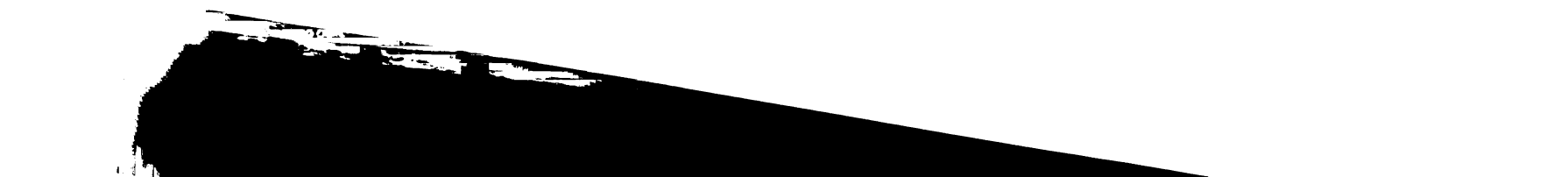
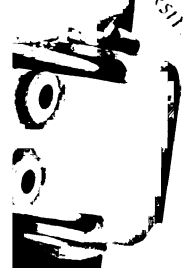




*Research question 1b.* Do family functioning and children's health practices differ between Taiwanese and Chinese American families? Results indicated no difference in family functioning and children's physical activity levels between ROC and CA samples. However, significant differences were found in children's dietary behavior between the two countries. ROC children reported higher intakes than CA children on fat, sugar, and overall food total scale ( $t=4.339, p<.0001$ ;  $t=3.761, p<.0001$ ;  $t=4.618, p<.0001$ , respectively). ROC children consumed more (ROC:  $M=21.76, SD=20.03$ ; CA:  $M=11.91, SD=7.95$ ) on fat subscale, more (ROC:  $M=14.75, SD=11.84$ ; CA:  $M=9.40, SD=6.14$ ) on sugar subscale and also more (ROC:  $M=36.52, SD=28.67$ ; CA:  $M=21.31, SD=12.30$ ) on overall food total scale than CA children.

In coping, children in Bay Area had significantly higher scores than ROC children on frequency (ROC:  $M=22.28, SD=10.61$ ; CA:  $M=27.82, SD=9.54$ ;  $t= -3.358, p=.001$ ) and effectiveness measures (ROC:  $M=25.72, SD=11.67$ ; CA:  $M=36.63, SD=10.66$ ;  $t= -6.089, p<.0001$ ). CA boys reported higher scores than ROC boys on frequency ( $t=-2.453, p=.014$ ) and effectiveness measures ( $t=-3.056, p=.002$ ). CA girls also reported higher scores than ROC girls on frequency ( $t=-2.379, p=.017$ ) and effectiveness measures ( $t=-4.607, p<.0001$ ). In children's coping, in ROC, children reported using eat or drink (81.9%) draw, write, or read (81.1%), watch TV (74.5%), do work around the house (72.6%), and play a game (71.3%) as their coping strategies. In CA, children reported draw, write, or read (91.2%), try to forget about it (88.2%), think about it (88.2%), try to relax (88.2%), and play a game (88.2%) as most frequency used coping strategies (See Table 8).

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In ROC, children reported draw, write, or read (89.3%), do work around the house (88.6%), walk or run (82.8%), try to relax (78.6%), and pray (77.8%) as most effective coping strategies. In CA, pray (97.6%), draw, write, or read (95.1%), say I'm sorry and tell the truth (94.9%), try to relax (93.3%), and do work around the house (92.9%) were reported by children as most effective coping strategies (See Table 9). ROC children identified exams (21.6%) whereas CA children identified friendship and play piano (11%) as another stressors. Other stressors identified by children were study, parent issues, extra school work, make mistakes, and get angry (See table 10).

**Aim 2.** To examine the relationship between family functioning and the health practices of Chinese children.

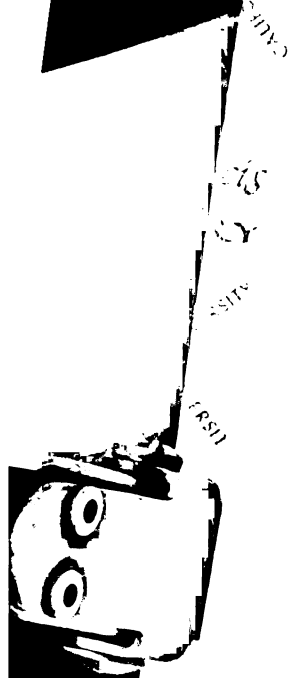
*Research question 2a.* Is more effective communication in the family related to better dietary behavior and greater physical activity for children in both countries? Pearson correlation coefficient was performed to examine these relationships. The correlation between family communication and MVPA METs was .001 ( $p=.993$ ), MVPA minutes was .001 ( $p=.993$ ), sedentary activity minutes was  $-.036$  ( $p=.764$ ). Thus, no relationship was found between family communication and children's physical activity level.

The relationship between family communication and children's dietary behavior was examined based on countries as the significant difference was found on dietary behavior between two countries. No significant correlation between family communication and FFQ was found in both countries. Thus, family communication was not related to either children's dietary behavior or physical activity level.

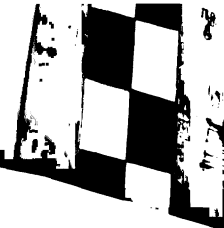
*Research question 2b.* Is more affective interaction in the family related to better dietary behavior and more physical activity for children in both countries? There was no correlation between affective responsiveness and MVPAC MET ( $r=-.087$ ,  $p=.267$ ), MVPAC minutes ( $r=-.090$ ,  $p=.251$ ), and sedentary activity minutes ( $r=.016$ ,  $p=.836$ ). Therefore, no relationship was found between family affective interaction and children's physical activity level.

The relationship between family affective interaction and children's dietary behavior was examined based on country. Affective responsiveness was found to relate to sugar ( $r=.255$ ,  $p=.013$ ) and total food scale ( $r=.225$ ,  $p=.028$ ) in ROC whereas affective responsiveness was related to fat scale ( $r=.27$ ,  $p=.026$ ) in CA children. Thus, a significant yet different relationship was found in each country between family affective interaction and children's dietary behavior.

*Research question 2c.* Is authoritarian parenting related to poorer dietary behavior and less physical activity for children in both countries? No relationship was found between parenting style and physical activity levels. However, significant correlations were found between authoritarian parenting and sugar subscale ( $r= -.251$ ,  $p=.039$ ) and overall parenting and sugar subscale ( $r=-.332$ ,  $p=.006$ ) in CA children while no relationship between parenting style and children dietary behavior was found in ROC children. In this study, authoritarian parenting is related to better dietary behavior in CA sample only. No relationship was found between parenting style and children's physical activity and different correlations were found between parenting style and children's dietary behavior between two countries.



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**Aim 3. To determine the relationship between children's coping strategies and their health practices.**

*Research question 3a.* Is increasing coping strategy use related to greater physical activity for children in both countries? Since coping frequency and effectiveness were different between two countries, the relationship between coping and physical activity was examined separately in each country. No relationship was found between children's coping frequency and MVPA MET both in ROC ( $r=.076$ ,  $p=.464$ ) and CA ( $r=.025$ ,  $p=.841$ ). Additionally, no relationship was found between coping effectiveness and MVPA MET in both countries (ROC:  $r=.072$ ,  $p=.49$ ; CA:  $r=.072$ ,  $p=.561$ ). No relationship was also found between coping frequency and effectiveness and children's sedentary activity time.

*Research question 3b.* Is increasing coping strategy use related to better dietary behavior for children in both countries? There was no significant correlation between children's coping and dietary behavior in CA children. However, a significant relationship was found between coping frequency and sugar subscale ( $r=.212$ ,  $p=.040$ ) and frequency and total food scale ( $r=.209$ ,  $p=.043$ ) in ROC children. Therefore, a different relationship between children's coping and their dietary behavior was found between two countries.

**Aim 4. To determine the degree to which family functioning and the health practices of children contribute to the higher BMI.**

*Research question 4a.* Is more physical activity related to lower BMI in Chinese children in both countries? Pearson correlation coefficient found non-significant correlations between BMI and MVPA METs ( $r=.141$ ,  $p=.073$ ) and BMI and MVPA

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minutes ( $r=.142$ ,  $p=.070$ ). A weak but significant relationship was found between BMI and sedentary activity minutes ( $r=.153$ ,  $p=.05$ ). Higher SAPAC sedentary activity minutes indicated more time spending in sedentary activity. Results suggested that more time spending in sedentary activity was related to higher children's BMI.

*Research question 4b.* Is poor dietary behavior related to higher BMI in Chinese children in both countries? Pearson correlation coefficient found non-significant correlations between BMI and FFQ fat, BMI and FFQ sugar, and BMI and FFQ total scale in ROC and CA sample. Thus, no significant relationship was found between children's dietary behavior and their BMI.

*Research question 4c.* Is less effective family communication related to higher BMI in Chinese children in both countries? Family communication had low but a significant correlation with children's BMI ( $r=.184$ ,  $p=.018$ ). Higher score indicated poorer family communication. Results suggested poorer family communication is related to higher children's BMI.

*Research question 4d.* Is less effective family interaction related to higher BMI in Chinese children in both countries? The correlation between affective responsiveness and children's BMI was  $.098$  ( $p=.216$ ). The correlation between affective involvement and children's BMI was  $-.020$  ( $p=.795$ ). No significant correlation was found between family interaction and children's BMI.

*Research question 4e.* Is authoritarian parenting related to higher BMI in Chinese children in both countries? The correlation between parenting style and children's BMI was  $-.199$  ( $p=.011$ ). A higher ATCRS score indicates more authoritarian parenting style. Results indicated that the less authoritarian parenting style was related to higher BMI.



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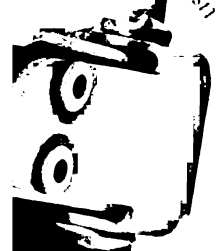
WORK 49

*Research question 4f.* What are the predictors of Chinese children's BMI in both countries? Some significant differences on children dietary behavior and family demographic information were found between ROC and CA subjects. The Pearson correlation coefficient tests were performed between children's dietary behavior measures (FFQ fat, FFQ sugar, FFQ total), significant different family variables (mothers' age, fathers' age, mothers' education, and fathers' education) and children's BMI to rule out the possible confounding effects. No significant correlations were found between possible variables and children's BMI. Correlations between variables were presenting in Table 11. A multiple regression was then performed to find best model to predict children's BMI.

Multiple linear regression using a stepwise hierarchical model was used to examine the relationship between independent variable and the dependent variable of BMI. The country variable was entered at the first step then significant variables were entered at the second step. Independent variables that were significantly correlated with BMI were entered into the model after controlling for the site. The three independent variables were communication (FAD communication subscale), parenting style (ATCRS mean) and sedentary activity time (minutes).

All three variables significantly contributed to the variance in children's BMI: parenting style (ATCRS) (5.5%), communication (5.2%) and sedentary activity time (2.3%). The model as a whole explained 11.4% of the variance in children's BMI ( $R^2=.114$ ,  $F=5.086$ ,  $p=.001$ ). Beta coefficients indicated that lower scores on ATCRS (less authoritarian parenting), high scores on family communication (poorer communication), and higher scores on sedentary activity minutes (more time in sedentary

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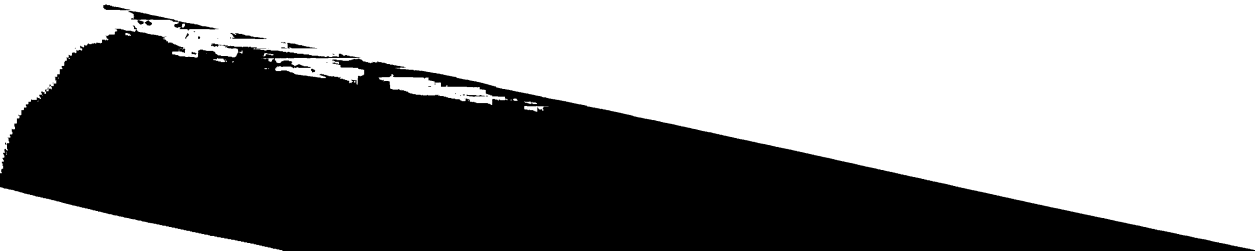
activity) were related to higher BMI after controlling for the site variable. Site did not significantly predict children's BMI, meaning country of residence was not a confounding variable in this study (See Table 12 for the regression model).

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## CHAPTER FIVE

### Discussion

Results of this study suggest that poor communication within the family, more democratic parenting, and higher sedentary activity levels of children are significant predictors of higher BMI in Chinese and Chinese-American children. Family interaction is related to children's dietary behavior in both countries. In CA, parenting style is related to children's high-sugar and total food intake. In Taiwan, the number of coping strategies reported by the child was found to be associated with eating a higher number of high-fat and high-sugar foods. In the U.S., highly acculturated mothers reported using a more authoritarian parenting style and were less likely to have overweight children than were low acculturated mothers (See Figure 5).

#### *Communication and children's weight*

This study revealed that family communication is related to children's BMI ( $r=.184$ ,  $p=.018$ ) and predicted BMI ( $\beta=.234$ ,  $sr^2=.054$ ,  $p=.003$ ). Poorer communication between family members is related to higher BMI in children. In this study, communication refers to the degree to which the family members communicate with each other in a clear and direct way. Examples of questions in the communication subscale are as follows: when someone is upset the others know why (q3), you can't tell how a person is feeling from what they are saying (q14), it is difficult to talk to each other about tender feelings (q22), we talk to people directly rather than go through a go-between (q29), we often do not say what we mean (q35), and we don't talk to each other when we are angry (q52). Mothers were asked to respond to questions related to their families from 1 (indicating strongly agree) to 4 (indicating strongly disagree). These

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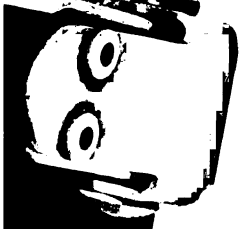


questions can be divided into two subgroups within the communication domain: affective expression related to nonverbal communication and behavior expression related to verbal communication. Examples of affective expression are q3, q14 and q22, as these questions deal with emotion such as upset feelings. Examples of behavior expression are q29, q35 and q52, as these questions deal with types of verbal communication..

Since Confucian's philosophy, which discourages emotional expression, has a great influence in Chinese daily life, use of emotional expression in Chinese culture is not common (Ho, 1986). The practice of high-context communication, involving indirectness, implicitness and nonverbal expression, discourages Chinese children and Chinese parents to express their feelings and views in a direct way, especially in a negative situation. However, Chinese culture in an industrial country such as Taiwan has changed due to westernized lifestyle. In recent years, Taiwanese parents agree that expressing their emotional feelings toward their children and spouse is appropriate and showing their love for each other is necessary (Bond, 1996). Parents' emotional responses and reactions have a direct impact on their children's development, health, and health behaviors (Diaz, Neal, & Vachio, 1991; Ratner & Stettner, 1991). A clear and adequate emotional response helps a child to establish and maintain good health behavior. For example, when a girl reaches for a candy bar instead of vegetables or fruits for a snack, the mother might get upset, as she wants her daughter to be healthy. The mother might simply take the candy bar away and blame the child, without expressing her concerns about the child's health. The child then may feel bad about herself and not understand why she should not have candy. Although the mother might provide healthy snacks at home, by not expressing her love and concern for the child's health, the mother



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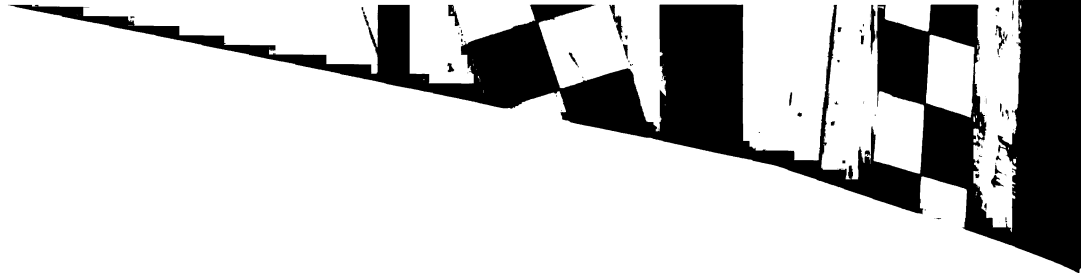
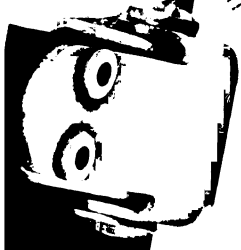
does not encourage the child to establish or maintain healthy behaviors, such as eating healthy foods and exercising.

Based on Social Cognition Learning Theory (Bandura, 1989), learning is a reciprocal situation through teaching and observation. A happy and positive learning environment encourages children to accept a new healthy behavior and maintain their health. A parent's expression of nurturing emotion is imperative to a child's development and healthy behavior, as it provides motivation for a child, allows the parent to establish healthy behaviors and reinforce self-regulation, and helps the child to accept new and healthy activities. Thus, when a family does not have clear and adequate expression of emotions, a child may not be able to establish a healthy lifestyle and regulate their own desires and behavior. A child who lacks self-regulation and tends to use food as a coping strategy to deal with stress is more likely to have a higher BMI.

Another communication subgroup, behavior expression, refers to verbal communication. Chinese culture emphasizes collectivism rather than individualism. In collectivism, family interest comes before one's own interest, and maintaining harmony is the goal of family. The primary function of communication is to maintain harmony within the family. Since harmony is the foundation of Chinese culture, the importance of preserving peaceful relationships with family members determines effective communication. Thus, clear communication is crucial in maintaining an atmosphere of harmony within the family.

Vague and indirect communication might confuse a child. For example, a mother might convey a message with dual meaning to the child that he/she needs to eat more in order to consume adequate nutrition but that the child also needs to watch his/her weight

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to prevent being overweight. A child also could be given a confusing message in regard to whether he/she should spend more time studying or exercising. Additionally, a child in a family with poor communication might have more stress and tend to cope by using passive coping strategies such as eating, drinking, and watching TV, which, as a result, increases the child's BMI. Thus, a child with stress caused by the parents' lack of clear expectations and communication might be eating and drinking unhealthy foods to cope with stress. The finding that children's coping strategies involve the increased intake of high-sugar foods and total food in Taiwan supports the concept that children's use of food as a comforting/coping strategy could have a negative impact on their BMI.

This finding of the relationship between family communication and children's BMI is supported by other studies that have shown that families with overweight children reported poorer family functioning than did families with normal weight children (Beck & Terry, 1985; Kinston et al, 1988; Valtolina & Ragazzoni, 1995). Beck and Terry (1985) assessed the obese and normal weight family members' perceptions of their family functioning. Findings revealed that families with obese children perceived their families as being less cohesive, having more conflict, and being less interested in social and cultural activities than did families with normal weight children. A more recent study done by Wilkins and associates (1998) examined family functioning and its relationship with overweight in preadolescent children. By assessing the mothers' reports during this study, the authors found that poor family functioning, especially in task accomplishment and control domains, was associated with higher BMI in children. Other studies also support the finding that poor family functioning is associated with higher BMI in children (Bains et al, 1987; Kinston, Loader, & Miller, 1987; Kinston et al, 1988). Since family



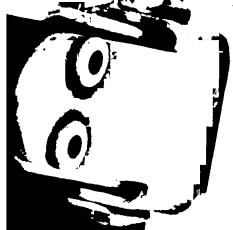
communication is one important aspect of family functioning, it is a critical factor in predicting children's BMI and their health behaviors.

*Affective response and children's health*

Other interesting results of this study also support the importance of appropriate affective expression on children's health. Examples of questions related to affective response are as follows: we are reluctant to show our affection for each other (q9), some of us just don't respond emotionally (q19), we don't show our love for each other (q28), and tenderness takes second place to other things in our family (q39). These questions deal with affective responses toward other family members. Results of the family interaction (affective responses) revealed that children whose families have poor affective responses, as indicated by a lack of appropriate emotional response to a range of situations, consumed more high-fat and high-sugar foods. Since expression of emotion is imperative to children's development and health, children whose parents do not express appropriate emotional responses may use eating as a comforting/coping mechanism and watching TV as a way of isolating himself/herself from the stressful or unhappy environment. Since eating and drinking and watching TV were reported to be two of the top coping strategies used by children, a child whose family has poor communication and inadequate affective responses will have more stress and use eating and watching TV to cope with their stress. This can explain why children from families with poor communication have higher BMIs.

Since communication and affective responses are important factors in promoting children's health, clinicians and nurses need to assess how parents communicate with their children and how they respond to their children's needs. Understanding different

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communication styles in the Chinese culture and encouraging parents to express their love and concerns to their children can help clinicians to establish a better relationship and higher level of trust with their Chinese patients and devise a culturally appropriate health plan for the child and the family.

### *Parenting practice*

An important factor found to be critical in children's health and relative weight issues is parenting practice. Since the ATCRS has been used in only one study of Chinese parents in the U.S., the psychometric assessment of ATCRS is important. The internal consistencies indicated lower reliabilities than did published studies (.52-.85 vs. .77-.91). The democratic subscale has the lowest alpha in this study. Examples of democratic parenting questions are as follows: children should be invited to participate in parent-teacher conferences (q2), children should be able to treat their playthings as they wish without fear of punishment (q7), children should be able to choose how much of each food they want to eat at a meal (q9), and children should participate in the decision about their bedtime (q11). Examples of authoritarian parenting questions are as follows: withholding allowance is a good method of discipline (q1), parents should remind children to say please and thank you when they forget (q3), parents should regularly help their children with homework (q4), and children should obey the wishes of their elders (q6). The lower internal consistency in the democratic subscale might be due to different parenting practices and emphasis on Chinese culture. In the Chinese culture, one of the parents' responsibilities is to teach the child appropriate socialization and ensure that the child does well in school. Setting rules and using oneself (parent) as an example are essential in helping the child to achieve academic and social success (Ho, 1989). Meeting

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the family's needs is more important than meeting one's (child's) own needs. Thus, parents play an important role in their child's life. Parents are frequently involved in decision making for their child. Since a child is seen as an immature individual, Chinese parents tend to provide guidance for their children. Thus, questions in the democratic subscale might not capture the main parenting philosophy and phenomena in Chinese culture. Although authoritarian parenting has been viewed as having a negative impact on children's health, questions in the authoritarian subscale reflect central phenomena in Chinese parenting, which provides guidance and involves in child's daily life. Therefore, the internal consistency in authoritarian parenting subscale was higher than the democratic subscale.

A recent study using the ATCRS in a Chinese-American population was done by Wang and Phinney (1998). The study examined the differences in child-rearing attitudes between immigrant Chinese mothers and Anglo-American mothers. Thirty Chinese mothers and 30 Anglo-American mothers participated in the study. In that study, the alphas for authoritarian and democratic subscales were .90 and .77, respectively. These alphas were higher than in the current study in authoritarian and democratic subscales ( $\alpha=.85$ ,  $\alpha=.53$ , respectively). However, Wang's study included only 30 Chinese-Americans, and alphas were computed for the total of 60 subjects, including Anglo-Americans. Although the alphas were lower than in Wang's reports, they presented a moderate to good reliability.

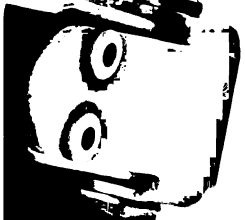
In the current study, the mean score was 2.36 (SD=.26) for the total scale, 1.97 (SD=.35) for authoritarian, and 3.10 (SD=.37) for the democratic subscale. The results suggest that Chinese mothers in ROC and Chinese-American mothers in CA had a less

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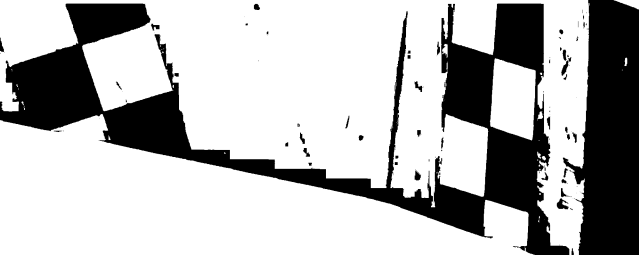
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authoritarian and more democratic parenting style compared with mothers in Wang and Hinkle's studies. In Wang's study, the Chinese-American mothers reported a mean score of 3.28 (SD=.36), while Anglo-American mothers reported a mean score of 3.00 (SD=.43). In Hinkle's study (1980), the mean score was 3.31 (SD=.39).

Results of this dissertation study show that Chinese and Chinese-American mothers were more democratic than mothers in previous studies reported by Wang. Some possible explanations based on personal observations can help interpret this finding. First, Chinese parents in Taiwan and in the U.S. may have changed their parenting styles due to the fact that they are living in a more westernized environment. Information in the media regarding parenting has exposed parents to various parenting methods and has shown that a democratic parenting style is superior to authoritarian parenting. Second, increasing level of education also could contribute to the change in parenting style (Chen & Rankin, in press). Third, most parenting research was done in early 1990 and might not reflect current Chinese and Chinese-American parenting styles. Lastly, the measure of parenting used in many studies might not accurately capture the meaning of parenting typically reinforced in Chinese culture (Chan & Leong, 1994; Ho, 1986).

*Parenting attitude and children's health.* Child-rearing attitudes have been studied due to the essential and vital influence in various psychological and physical health outcomes (Chen & Uttal, 1988; Lau & Klepper, 1989; Olvera-Ezzell, Power, & Cousins, 1990). This study found a negative relationship between authoritarian parenting and children's BMI; the less authoritarian parenting style or more democratic parenting is related to higher BMI. In the regression model, a lower parenting score (less authoritarian and more democratic) predicts higher BMI in children (beta=-.239,  $sr^2 = .0547$ ,  $p=.002$ ).

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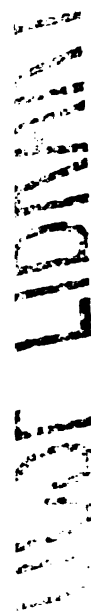


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The parenting measure (ATCRS) captures parents' attitudes toward the rearing of their children in terms of authoritarian and democratic parenting styles. This result suggests that a less authoritarian parenting style or a more democratic parenting style contributes to a higher BMI in children.

In Taiwan, parents are expected to teach their children the important values, respect elders, and obey rules. A loving and caring parent is the one who sets up reasonable rules and is involved in the child's daily life, especially schoolwork. Knowing the child's friends, what the child does, where the child goes, and reinforcing values such as respect for elders and obeying parents and teachers are considered in Chinese culture to be the parents' most essential responsibilities in raising a successful and good person. Thus, questions regarding authoritarian parenting, such as parents should regularly help their children with homework and children should obey the wishes of elders, are considered as positive values rather than negative values seen by the Western culture. In the Western culture, authoritarian parenting refers to being demanding and nonresponsive; in the Chinese culture, authoritarian parenting has a different meaning than the one given by the Western culture. In the Chinese culture, an authoritarian parenting style might indeed be loving and caring. For instance, Chao (1994) suggested that the concept and measure of authoritarian parenting is ethnocentric and fails to capture the notion of "training" in Chinese culture.

The concept of training, as defined in parenting literature, is believed to be positive and essential in Chinese culture (Chao, 1994). However, several studies have indicated that this concept and parenting practice is often mistakenly labeled as "authoritative" or "controlling" by Western culture and related measures (Lin & Fu,

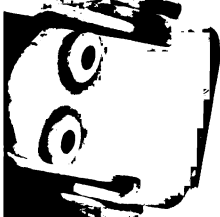


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1990). For instance, “it is helpful to remind children of the rules at home” (question 5) and “children are not allowed to wear clothes that are noticeably dirty” (question 10) are seen as authoritarian if parents agree with these questions. In the Chinese culture, it is the parents’ responsibility to ensure that the child behaves appropriately and is clean at all times. Questions related to school involvement are perceived as authoritarian parenting in Western culture, while this involvement is essential in Chinese parenting, as helping children succeed academically is one of the parents’ most important responsibilities. Therefore, democratic parenting might have a negative meaning and impact on children’s health in Chinese culture, as democratic parenting might be seen as uncaring, unloving, and neglectful.

Thus, this aspect related to the concept of parenting and parenting styles can be interpreted differently in these two cultures. Interpreting parenting styles in the Chinese population should be done carefully when using a Western-developed measure. The development of culturally appropriate and sensitive measure of parenting practice is essential to understand the phenomena and concepts of parenting in Chinese and Chinese-American populations.

*Parenting and children’s dietary behavior.* An interesting finding related to parenting and children’s health is the relationship between democratic parenting and high-sugar and total food intake in CA children. The finding suggests that a more democratic parenting style is associated with a greater intake of high-sugar foods and a greater total food intake in Chinese-American children. As democratic parenting might indeed reflect unstructured parenting in the Chinese culture, children in a less structured family environment might not be able to self-regulate their food intake. Chinese-





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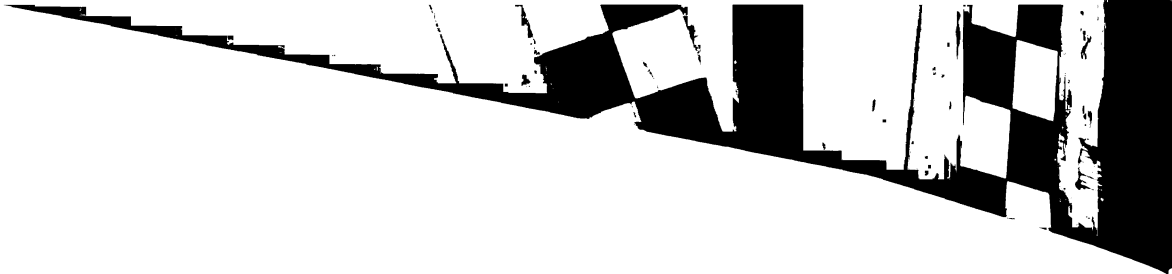
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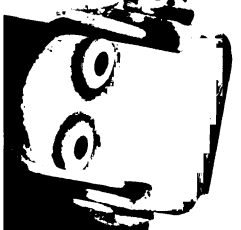
American parents might have greater difficulty in parenting their children, as they are living in a society that has different parenting practices and values. The family's values reflect the parents' traditional beliefs learned from their traditional Confucian Chinese culture that emphasizes collectivism and interdependence, and the societal values reflect the Western beliefs on individualism and independence. The different emphasis on beliefs between family and larger society in Chinese-American families might place parents and children in a stressful situation. Democratic parenting might be a reflection of detachment or avoidant parenting, as it requires less structured parenting. Unstructured parenting might diminish the child's ability to self-regulate his/her healthy behaviors. Thus, when a child lacks the ability to self-regulate, he/she might not be able to choose healthier food or perform healthy activities.

Studies have shown a negative relationship between parenting style and children's psychosocial well-being and children's health (Diaz et al, 1991; Tinsley, 1992). For instance, in western literature on eating disorders, studies have found a strict and controlling family environment to be related to an increased prevalence of anorexia in adolescent girls (Hill & Franklin, 1998; Russell, Kopec-Schrader, Rey, & Beumont, 1992). Adolescent girls develop anorexia to gain a sense of control over the family environment. In contrast, when the family environment is chaotic and without any control, adolescent girls tend to develop bulimia as a result of a lack of adequate control and self-regulation learned from the family (Agras, Hammer, & McNicholas, 1997; Casper & Troiani, 2001).

These results are consistent with other studies that have found that children whose parents are highly controlling about nutritional issues are less able to self-regulate their

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food intake (Birsh & Fisher, 1995; Costanzo & Woody, 1984; Gutting et al, 1999; Johnson & Birch, 1994; Johnson & Birch, 1994; Klesges et al, 1984). These studies suggest that restrictive parenting behavior tends backfire, as the child eats more snack food when around these products. Yet, one study done by Whitaket and associates (2000) found no relationship between maternal restraint scores and children's percentage of body fat.

There are some other possible explanations for the current study finding that less authoritarian parenting contributes to higher BMI in children. First, several studies have shown that authoritarian parenting in Chinese families might not necessarily reflect restrictive parenting that was captured in Western society and measures. Conversely, parenting involvement, care, supervision, and encouragement of academic achievement, which typically have been identified as "authoritative" parenting in Western measures, are, in fact, a reflection of caring and loving parenting in Chinese culture. Thus, less authoritarian parenting might, indeed, mirror less caring and loving parenting in the Chinese culture. Since literature has demonstrated that obese children tend to come from neglectful or less caring families (Christoffel & Forsyth, 1989; Lissau-Lund-Sørensen & Sørensen, 1992), it is possible that less authoritarian parenting in Chinese families has a negative influence on children's health and their weight issues.

Studies have shown conflicting results, and these might be due to a different emphasis on parental roles among cultures and various measures used in parenting studies. Several studies have reported a higher authoritarian parenting style among Chinese and Chinese-American parents compared with Western parents (Chao, 1994; Chiu, 1987; Dornbush, Ritter, Leiderman, Roberts, & Fraleigh, 1987). In American

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samples, authoritarian parenting styles have been shown to have negative impact on children's competence (Baumrind, 1991; Lamborn, Mounts, Steinberg, & Dornbusch, 1991). Research has indicated that Chinese parents are seen as more "authoritarian" than are mainstream American Anglo parents (Chao, 1994; Chiu, 1987; Kelley & Tseng, 1992). These studies suggested that Chinese parents were more restrictive and controlling. However, the concepts of parenting and parenting styles might be different among various cultures.

Lastly, children in this study were between 8 and 10 years old. They might need more appropriate and adequate guidance to help them establish healthy dietary and exercise habits. Authoritarian parenting might provide more structured management than less authoritarian parenting since children in this age group might still need some type of structured supervision, such as being reminded to choose healthy foods and to get enough sleep. Thus, authoritarian parenting might be, indeed, a favorable protective factor for children's weight problems.

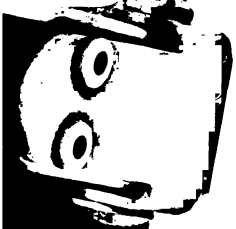
The current study as well as other studies suggest that parenting practice plays a critical role in children's health. Because a different parenting practice, compared with American parents, is performed in Chinese culture, understanding various parenting styles and their meaning is important in helping children to improve their health. Encouraging parents to reinforce healthy behavior and allowing children to participate in decision making can help the child to establish health behavior and learn self-regulation techniques.

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### *Children's physical activity/inactivity*

In this study, the average time for performing moderate to vigorous activity was 92.31 minutes (1.5 hours) per day. The Chinese and Chinese-American children engaged in appropriate levels of physical activity, though other studies have reported lower level of physical activity in Chinese children (O'Loughlin et al, 1999; Wolf et al 1993). This could be due to the increasing awareness of the impact of low activity on children's health. For instance, the physical education (PE) class is a regular class in Taiwan, and instructors have been using different activities and games to encourage children's participation. Gymnastics, basketball, soccer, racket sports (such as tennis), and swimming are common activities reported by children in this study. Differently structured and fun activities increase children's willingness to participate in sports and exercise. When interviewing mothers of Chinese children in ROC, they mentioned that parents do not encourage their children to play outdoors after school because they are concerned about the safety of the child. Thus, most activities were performed in PE classes, as parents mentioned that playing outdoors after school is not recommended due to the safety reasons. This could also explain why children spend more time in sedentary activities such as watching TV, playing computer games, and studying.

Sedentary time included TV/video viewing, computer game playing and studying, was also examined in this study. Results indicate that children spent approximately 2.3 hours a day engaging in sedentary activity; this is 1.5 times longer than children spent engaging in physical activity, suggesting that children spend more time doing sedentary activities than physical activities (ratio: 1.5:1).



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*Children's physical activity and weight.* In the regression analysis, sedentary time predicts a child's BMI (beta=.151,  $sr^2=.0225$ ,  $p=.046$ ). The more the child spent engaging in sedentary activity, the higher the child's BMI. This is an important finding in preventing and treating childhood obesity. Physical activity increases energy expenditure and decreases body mass. Increased sedentary time indicates a decrease in energy expenditure. A decrease in energy expenditure due to increased sedentary behavior is one of main factors in gaining body fat. The energy store is equal to the energy intake minus the energy expenditure ( $E = \text{intake} - \text{expenditure}$ ). If the child did not consume more food or calories but decreased energy expenditure, and intake is greater than expenditure, the energy store will be positive and lead to weight gain. Children who spent more time engaging in sedentary activities got bigger and gained more weight. Thus, decreasing sedentary activities might help to reduce children's body mass.

Several studies have supported this finding and utilized decreasing sedentary behavior as an intervention to prevent and treat obesity (Dietz & Gortmaker, 1985; DuRant et al, 1994; Epstein et al, 2000; Epstein, Valoski, Vara, & McCurley, 1995; Robinson, 1999). Increasing sedentary behavior decreases the body's metabolic rate (Klesges, Shelton, & Klesges, 1993), increases snacking behavior (Strasburger, 1992) and decreases physical activity, which decreases the energy expenditure that promotes weight loss (Sallis, 1993). Thus, increased sedentary activity is a risk factor for developing higher BMI in Chinese children in both countries.

### *Children's coping*

A relationship was found between the number of children's coping strategies used (frequency) and their food intake. This is an important effect on children's coping



strategies and their weight. Psychometric analysis of the schoolagers' coping strategy inventory (SCSI) revealed better internal consistencies on frequency and effectiveness subscale compared with Ryan-Weinger's study (1992). Item analysis showed a good range of variance in both Chinese and Chinese-American children, indicating that SCSI is an appropriate coping measure to use in Chinese children. However, this study did not examine SCSI's validity; future studies need to further examine its construct validity as well as its factorial structure.

The total sample reported low frequency and effectiveness means (frequency:  $M=24.67$ ; effectiveness:  $M=30.30$ , respectively) compared with data reported by Ryan-Weinger's studies on nonsymptomatic healthy children aged 8 to 12 years old ( $M=34.01-43.14$ ;  $M=37.78-47.21$ , respectively). This indicated that Chinese and Chinese-American children reported a smaller number of coping strategies and perceived these coping strategies to be less effective than those of Western children. Because of the lack of data on the target population, it is difficult to conclude whether fewer coping strategies and their decreased effectiveness are usual and expected. One explanation for the lower frequency and effectiveness scores could be that Chinese children used other types of coping strategies that were not listed in the questionnaire. Although the PI asked children to write down coping strategies that were not listed in the questionnaire, most children did not identify new items. Future study is needed to retest this questionnaire and examine its content and construct validity.

Comparatively, Chinese-American children reported higher scores in both frequency and effectiveness subscale than did Chinese children in Taiwan ( $t=-3.358$ ,  $p=.001$ ;  $t=-6.089$ ,  $p<.0001$ , respectively). Although Chinese-American children reported



similar scores on the effectiveness subscale compared with Ryan-Weinger's studies (M=36.63 vs. M=37.78-47.21), the mean on frequency subscale was still lower than in Ryan-Weinger's studies (M=27.82 vs. 34.01-43.14).

The difference between Chinese children in Taiwan and Chinese-American children in the U.S. could be due to various coping strategies used by the children. In the item analysis, ROC children rank order reported are as follows: (1) "eating and drinking," (2) "drawing/reading/writing," and (3) "watching TV," while CA children reported (1) "drawing/reading/writing," (2) "try to forget about it," and (3) "think about it" as the top three coping strategies. This discrepancy on the mean score of frequency used might be due to the different coping strategies used by children from two countries. Different coping strategies in the two countries could be due to environmental and societal variation in encouraging coping as well as accessibility of these coping strategies. For instance, eating and watching TV could be appropriate coping strategies for Taiwanese children, as these are passive coping strategies available to these children, whereas Chinese-American children might be encouraged to solve the problem intrinsically by trying to forget about it. Similar reasons could explain the difference on the effectiveness subscale between the two countries. This is an important area for further childhood obesity research, as studies might focus on teaching different and effective coping strategies as a means of prevention and intervention.

*Children's coping strategies and their weight.* This is an important finding regarding childhood obesity, as research has indicated that overeating and excessive TV viewing are potential factors contributing to childhood obesity. When a child frequently uses eating and drinking as comforting/coping strategies, he/she is at risk for increasing

food intake that might exceed his/her nutritional needs and increase the possibility of weight gain. Watching TV as a detached or avoidant coping strategy decreases children's physical activity and energy expenditure, which also contributes to excessive weight gain. Since research has reported that watching TV is also associated with excessive food intake, due to the influence of the food product-related commercials, watching TV and increased food intake are essential factors attributed to children's weight issues.

Interestingly, two of the top five frequently used coping strategies (eating/drinking and watching TV) reported by all children in the study were not effective in helping the children to reduce their stress. Several stress and coping researchers also have reported that children use eating/drinking and watching TV as coping strategies in dealing with daily stressors (Kenealy, 1989; Walker, 1988; Sharrer & Ryan-Wenger, 1995). Valtolina and Ragazzoni (1995) examined the relationship between mother-child dyads and their interaction patterns among 33 children ages 9 to 12 years old. They found that obese children used "avoid conflict" and "adopt a one down complementary position" in negotiation. These types of coping strategies can be viewed as emotion-focused coping style, which has been shown to be less effective in dealing with stress and problems (Band & Weisz, 1988; Compas, Banez, Malcarne, & Worsham, 1991).

Since eating, drinking, and watching TV are passive and emotion-focus coping strategies, poorer coping might affect children's health. These passive and emotion-focus coping strategies increase energy intake and decrease energy expenditure, which increases children's BMI. As many studies have used behavioral modification as an intervention to help children reduce poor dietary behavior and sedentary activity and to increase physical activity level, future research might consider educating children on

appropriate coping strategies to prevent childhood obesity. Additionally, no study has examined the coping strategies used by Chinese and Chinese-American children and the reasons for them to use the strategies. Understanding how they cope and why they cope this way is critical in promoting children's health in this population.

### *Acculturation*

Another factor related to children's body mass is the level of acculturation. Acculturation is the process by which one group asserts its influence over another and what happens is likely to be difficult, reactive, and conflictive, affecting one's physical, emotional, and psychological well-being (Berry, 1980). Acculturation has an impact on one's thoughts, beliefs, attitudes, and behaviors. In this study, Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA) was utilized to examine California mothers' acculturation levels. The internal consistency of SL-ASIA was .80, suggesting an adequate reliability. The SL-ASIA is a questionnaire covering such topics as language, identity, friendships, behaviors, general and geographic background, and attitudes. This questionnaire was used to examine the acculturation level of Asian immigrants. The questionnaire groups a person in a high acculturation (Western identity) or low acculturation (Asian identity) category. A person retaining a high Asian identity (low acculturation) is one whose values, behaviors, preferences, and attitudes reflect those of a person with an Asian background. A person with an Asian identity has strong Asian values, beliefs, behavioral skills, and styles, while a person with a Western identity has values, beliefs, and behavioral skills similar to the host country. Compared with Suinn's other studies that have internal consistencies ranging from .79 to .91, this measure performed fairly well in Chinese-Americans. Examples of questions in SL-ASIA are as



follows: what language do you prefer, how do you identify yourself, whom do you now associate with the community, and what is your food preference at home.

In this study, the average number of years since immigration to the U.S. was 16.35 (SD=6.64). The results of SL-ASIA indicated that approximately 56% of CA mothers identified themselves as being of Asian identity (lower acculturation), whereas 44% identified themselves as being of Western identity (high acculturation). The year of immigration to the U.S. was higher for mothers of Western identity (M=17.27 years) than for those of Asian identity (M=14,  $t=-3.489$ ,  $p=.001$ ). Maternal age and education levels were not different between high and low acculturated mothers, suggesting that the length of immigration to the country contributed to the maternal level of acculturation, i.e., the longer the person's immigration, the greater their western acculturation. This is consistent with other research regarding the association between increased length of immigration and level of acculturation (Suinn et al, 1995).

*Acculturation and children's weight.* In this study, no relationship was found between maternal acculturation level and children's BMI (body mass index as a continuous value). This is consistent with one study that examined Chinese and Chinese-American adults regarding body weight difference (Schultz, Soindler, & Josephson, 1994). No difference was found between foreign-born adult Chinese and Chinese-Americans in the U.S. Studies have found that immigrants' health status changed due to higher acculturation level in second and third generations (Bond, 1996).

In this study, a significant difference between children's overweight status (children were grouped into overweight vs. normal weight group based on CDC 2001 standard) and maternal acculturation (low vs. high acculturation) was established.

Children whose mothers were of low acculturation were more likely to be overweight than children whose mothers were highly acculturated ( $\chi^2=.4.58$ ,  $p=.032$ ). The high maternal acculturation might be a protective factor for childhood obesity because of an increased level of weight concern among westernized women. Davis and Katzman (1999) assessed the relationship between acculturation, self-esteem, depression, and characteristics associated with eating disorders among Chinese students in the U.S. Results indicated that for women, higher acculturation was related to more eating disorders, drive for thinness, body dissatisfaction, and fear of maturation.

This is consistent with Root's study (1990) suggesting that in an effort to assimilate, immigrants may overcorrect real or imagined deficits. For women, the challenge to be part of the mainstream society and meet the beauty standards, including being slim, tall, and blond, becomes a struggle for many immigrants (Lee, 1993; Lee, Leung, Lee, Yu, & Leung, 1996). Perhaps it is not surprising that as one acculturates the awareness of body weight, the drive for thinness increases. Although this study measures maternal acculturation, mothers influence the children via their values and beliefs, which then influences the children's health. Additionally, mothers with a low level of acculturation might also have more traditional beliefs, including that a chubby child is a cute and healthy child as well as a sign of a wealthy family (Bond, 1996). Thus, a child's weight may not be a concern for these mothers of low acculturation.

Study results are consistent with other reports that indicate a negative relationship between acculturation and body weight among other immigrant group (Hispanics) (Hazuda, Haffner, Stern, & Eifler, 1988; Pawson, Martirell, & Mendoza, 1991). These studies suggest that the negative relationship between acculturation and body weight in

Hispanic immigrants could be due to the obsession with thinness and desire for slimness existing in the Westernized society, and highly acculturated Hispanic immigrants tend to reinforce this obsession with thinness. Results of the current study indicate that Chinese-American children experience desirable health effects of maternal acculturation to the U.S., possibly because of an enhanced awareness of obesity, health issues related to obesity, and desirability of thinness that is reinforced in the mainstream society.

#### *Other significant findings*

##### *Family environment*

Results indicated that mothers and fathers in CA were older and had higher education level than those who lived in ROC. All mothers are first-generation immigrants. Since the majority of mothers in CA reported that their reasons for immigration were to get an education (29.2%) and to get married (27.1%), it is reasonable to see Chinese-American immigrants reporting higher education and income levels. Additionally, the majority of mothers in CA were employed (72%), whereas only 58 percent of mothers in ROC were employed. Since one of the main reasons for immigration was to get a higher education, and more mothers in the U.S. were employed and earned higher incomes than did mothers in ROC, it is not uncommon to find Chinese people in the U.S. to be more educated, be employed, and be wealthier than Chinese people in Taiwan.

Although researchers have found that home environment factors such as SES, income, and parents' education level are negatively related to children's weight problems, no association was found between family household income, maternal age, and education and children's BMI in this study. This finding is supported by other studies

(Epstein, Myers, & Anderson, 1996; Laitinen, Power, & Jarvelin, 2001; Parsons, Power, & Manor, 2001). Laitinen and associates (2001) examined factors predicting adult obesity. They followed a total of 6280 people from birth to 31 years old. BMI and questions related to SES were collected at birth and at 1, 14, and 31 years old. Results revealed that at age 14, there was no relationship between BMI and SES. Parson and associates (2001) examined the influence of birth weight, maternal weight, and SES on BMI at different stages of later life in 10,683 participants. Data were collected at age 7, 11, 16, 23, and 33 years old. Again, no relationship was found between BMI and SES.

*SES and children' weight.* The finding of no relationship between SES and BMI may be due to an increasing awareness of children's health and access to healthcare across different SES groups. In ROC, children receive free medical care and examinations until they are six years old and after that a minimum fee is required (NT \$50, US. \$1.5) to get nonhospitalized medical care. In this study, only three percent of the CA families have annual household incomes less than \$12,000, and another 3% have annual incomes less than \$24,000. In CA, Medicare and Healthy Family cover many disadvantaged and low-income families and their children's healthcare. Affordable healthcare increases access to healthcare providers, awareness of children's health, and knowledge related to children's healthcare. Secondly, the availability of food and discrepancy on accessing and purchasing food are not different among SES groups due to the reasonable price of food. Lastly, the low level of maternal employment rate in ROC might increase the probability of preparing healthy meals at home.

Epstein's study also supports the current study finding that no relationship was found between SES and children's BMI and helps provide an alternative explanation for

this finding. Epstein and associates (1996) examined the relationship between maternal psychopathology and family socioeconomic status with psychosocial problems in obese children. This study included a total of 152 children and their mothers. Results indicate that SES was related to children's weight and psychopathological problems only when maternal stress was high. After controlling for the maternal distress level, SES was no longer uniquely related to children's weight and psychopathology. The authors suggested that low SES might be a risk factor for increasing maternal stress level and indirectly increasing children's weight and psychological dysfunction. Low household income may impact children's weight issues through its affect on poorer family functioning and increasing maternal stress. Thus, these findings suggest a critical view of the literature on SES as an indirect, yet potential risk factor for childhood obesity through the dysfunctional family and maternal stress.

#### *Food and nutrition*

The internal consistencies on the FFQ were similar to Sheu's report ( $M=.85$  to  $.92$  vs.  $M=.91$ ). Compared with Sheu's study, Chinese and Chinese-American children in this study reported a total of 17.66 items in three days (approximately 5.89 items per day). Results indicated a similar amount of high-fat and high-sugar food consumed by the children in the two studies. Sheu had examined 351 six graders in Taiwan, and FFQ was used as the measure of their dietary behavior. In his study, children were asked to report how frequent they consumed the food items listed in the FFQ in the previous week. Results indicated that six graders in Taiwan reported 47.90 high-fat and high-sugar items per week (approximately 6.84 items per day).

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4. The fourth part of the document discusses the implications of the study and provides recommendations for future research. It highlights the need for further investigation into the effectiveness of the different methods and techniques used.

5. The fifth part of the document concludes the study and provides a final summary of the findings. It emphasizes the importance of maintaining accurate records and the need for transparency and accountability in financial reporting.

However, there was a significant difference on FFQ total score between children in ROC and CA. ROC children reported higher total scores, indicating that higher high-fat and high-sugar food items were consumed than CA children. This FFQ was developed and tested in Taiwan and was used for the first time in the U.S. in this study. Children in the U.S. certainly have different food items that they consumed that may not have been listed in FFQ, based on the conversations with children. For instance, U.S. children eat pasta with meat balls, buffalo wings, burritos, and onion rings-foods that are all high in fat but not commonly found in Taiwan and not listed in the FFQ. This could explain the discrepancy in mean scores between the two countries. Regardless of the differences between the two countries, results suggest a warning sign for increasing the amount of high-fat and high-sugar food that children consume today.

Studies have indicated that children have been consuming more high-fat and high-sugar foods instead of vegetables and fruits (Decklbaum, Fisher, Winston, Kumanyika, Lauer, & Pi-Suner, 1999; Milner & Alison, 1999). Many children did not meet the recommended dietary items suggested by the U.S. Department of Health and Human Service. According to Kennedy (1996), less than 20% of American children met the recommended number of servings of grains, vegetables, and fruits, and fewer than one third eat the suggested number of meat product and drink the recommended glasses of milk. Musaiger's study (1996) also revealed that children today consumed more fat- and sugar-laden foods than previous generations. In Taiwan, studies also reported that children ages 8 to 11 consumed more than 33% of total calories from fat; 50% of them ate nighttime snacks; and 40% of students drank coke, soft drinks, and other sugary drinks (Shieh, 1993; Wu, 1996). Results of this study are consistent with other studies

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3. The third part of the document focuses on the role of technology in data management and analysis. It discusses how modern software solutions can streamline data collection, storage, and processing, thereby improving efficiency and accuracy.

4. The fourth part of the document addresses the challenges associated with data management, such as data quality, security, and privacy. It provides strategies to mitigate these risks and ensure that the data remains reliable and secure throughout its lifecycle.

5. The fifth part of the document concludes by summarizing the key findings and recommendations. It stresses the importance of a data-driven approach in decision-making and the need for continuous monitoring and improvement of the data management process.



suggesting that children today are eating more high fat and sugar food. This trend may be associated with the increasing prevalence of overweight. However, current study findings did not support this hypothesis.

*Children's dietary behavior and their weight.* This study found that children's high-fat and sugar intake was not related to their BMI and did not predict BMI. This is consistent with other studies suggesting that overweight children did not necessarily consume more calories or more food than their lean counterparts and suggested that a decrease in activity level or an increase in inactivity level might be the reason for weight gain (Heini & Weinster, 1997; Maffels et al, 2000; Milner, & Allison, 1999).

Results suggest a similar dietary behavior between normal weight and overweight children. Other factors, such as increasing sedentary activity and decreasing physical activity, appear to contribute to children's weight issues. Another possible explanation is related to family functioning in terms affective response. Results indicated that affective responses and authoritarian parenting were related to Chinese-American children's fat intake in the United States. The poor affective response and more democratic parenting are related to children's higher amount of fat intake. In Taiwan, affective response and the frequency of the use of children's coping strategies were related to Chinese children's sugar and total food intake, suggesting that the lack of affective expression and less structured parenting might reflect a dysfunctional family. The stressful situation might increase the child's use of unhealthy food (high-sugar and high-fat food) as a coping strategy.

Results also suggested that children in this study had different dietary patterns between the two countries. Although factors related to children's dietary behavior were

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different between the two countries, family affective response seems to be an important factor related to Chinese children's dietary behavior in both countries. Affective response is the ability of family members to respond to a range of situations with appropriate quality and quantity of emotion. When family members have problems expressing their emotions appropriately, the child tends to consume high-fat and high-sugar foods. This could be the coping strategy (eating) the child uses to deal with the dysfunctional family situation, which is supported by the fact that one of the most frequently mentioned coping strategies reported by children is eating/drinking. Thus, it is possible that the child's overeating is an indicator of problematic family functioning.

However, as mentioned earlier, the FFQ was used in the U.S. for the first time. It is challenging to conclude that FFQ is adequate in Chinese-American participants. The lack of more environmental and societal appropriate food items listed in the FFQ might contribute to the nonsignificant and paradoxical findings. Further studies might need to carefully re-examine this factor using a culturally and environmentally appropriate questionnaire.

### Conclusion

This study revealed that poorer communication within families, more democratic parenting, and more sedentary activity contribute to higher BMI in Chinese and Chinese-American children (See Figure 5). Results suggest that healthy family communication and parenting style does impact a child's health, especially obesity. Families with clear verbal and nonverbal communication and structured parenting, which has clear rules and expectations, help to regulate a child's health behavior. There are two things parents can do to help improve their child's health. These included setting appropriate and reasonable

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. W. B. Jones, and Mr. C. D. Brown, among others.

2. The second part of the document is a list of the names of the members of the committee who have been elected to the office of Chairman. The names are listed in alphabetical order, and the office of Chairman is listed below each name. The list includes names such as Mr. J. H. Smith, Mr. W. B. Jones, and Mr. C. D. Brown, among others.

rules and structures and showing love and warmth to their children. A loving, warm, and structured family provides guidance for children to maintain their health. Therefore, assessment of family functioning and parenting style is necessary in nursing practice to promote children's health and prevent obesity. Additionally, helping parents to plan an adequate and developmentally appropriate physical activity menu is critical in contrast to limiting total food intake to prevent and treat childhood obesity.

Acculturation level also plays an important role in Chinese-American children's health. Highly acculturated mothers are less likely to have an overweight child compared with low acculturated mothers. Several explanations contributed to these findings. Due to their ability to read and understand English, highly acculturated mothers may enforce the desire for thinness, are more aware of the effects of overweight on children's health, and have more knowledge of children's weight issues. This is an important area in nursing, as an increasing number of new immigrants are receiving healthcare and more and more nurses have encountered new Chinese immigrants in their practices. This area needs more research to explore the acculturation level and children's health, as there is a lack of research in this area.

An interesting and critical finding from this study is related to children's coping strategies. Item analysis revealed an important aspect of the relationship between children's use of emotional focus and passive coping strategies and their overweight issues. Since the most frequently mentioned coping strategies were sedentary and food based (drawing/reading/writing, eating/drinking, and watching TV), children reported engaging in emotional focus, passive coping, and sedentary activity when they encountered stressful events. A possible relationship between the type of emotion-focus

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4. The fourth part of the document discusses the importance of communication and reporting in the context of data analysis. It emphasizes the need for clear and concise communication of findings to stakeholders and the importance of providing actionable insights.

5. The fifth part of the document discusses the challenges and limitations of data analysis. It highlights the need for careful consideration of data quality, bias, and the potential for misinterpretation of results.

6. The sixth part of the document discusses the future of data analysis and the role of emerging technologies. It highlights the potential of artificial intelligence, machine learning, and big data to revolutionize the field of data analysis.

7. The seventh part of the document discusses the ethical considerations surrounding data analysis. It emphasizes the need for transparency, accountability, and the protection of individual privacy and data security.

8. The eighth part of the document discusses the importance of ongoing education and professional development in the field of data analysis. It highlights the need for individuals to stay current in their knowledge and skills to effectively navigate the rapidly changing landscape of data analysis.

9. The ninth part of the document discusses the role of data analysis in various industries and sectors. It highlights the wide range of applications for data analysis, from healthcare and finance to marketing and social media.

10. The tenth part of the document discusses the importance of collaboration and teamwork in data analysis. It emphasizes the need for individuals to work together to share knowledge, resources, and expertise to achieve the best results.

coping and possibility of being overweight needs to be examined in future studies. However, nursing should pay attention to the type of coping strategy the child uses to deal with stress and help children to learn more problem-focus and effective problem-solving skills. Helping children develop healthy and effective coping strategies can not only improve their psychosocial health but also their physical health, including weight loss.

### Limitations

Because this is one of the first research reports examining familial factors, children's health behavior, and Chinese and Chinese-American children's weight, there are some limitations. Despite a careful translation and the pilot work, since most measures used in this research have not been tested and used in Chinese and Chinese-American population (such as SCSII and SAPAC), future studies are needed to examine the validity and reliability of these measures in a larger sample. Secondly, despite an appropriate sample size, as determined by the power analysis used in this study, the model explains only 11.4% of the variance on children's BMI. A future study with a larger sample size of underweight and overweight children might help to further explain the degree to which family factors and children's health-related behavior contributes to their weight status. Since this is a descriptive study, a causal relationship cannot be provided. A longitudinal study examining the change in BMI and other important factors may provide more accurate information. Additionally, only one school in Taiwan was invited to participant in this study. Future studies need to include more schools and diverse SES families.

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The use of self-report on physical activity and dietary behavior might underestimate or overestimate children's actual activity levels. The use of other equipment, such as HR monitor or Caltrac, will be more accurate in estimating children's patterns of physical activity. The FFQ might not accurately capture children's eating behavior in the U.S. since it was developed and used in Taiwan originally. Thus, a culturally and environmentally sensitive measure of dietary behavior is necessary to examine Chinese-American children's nutritional and dietary patterns. The combination of parents' and children's food intake reports can improve the reliability of the record. An U.S.-developed dietary assessment with additional modification based on typical Chinese dietary practice might also help to adequately examine Chinese children's dietary behavior. Additionally, children and families who participated in this study only represented approximately 30% of participants who were initially invited. The self-section of participants might not truly represent the population, as parents who involved in this study might be more aware of children's health than those who did not participate. Thus, generalizability of the study might be limited.

#### Further implications for nursing and research

Results of this study indicate an essential and critical approach to preventing and treating childhood obesity in Chinese and Chinese-American children. Findings suggest that family plays a vital role in Chinese children's health and weight issues. Assessment of family functioning, parenting styles, and children's sedentary behavior could help nurses detect the risk of childhood obesity in Chinese and Chinese-Americans. A focus of family rather than the child per se might be beneficial in preventing children's health problems and enhancing their physical and psychological well-being. Spending time



talking to parents about family issues and parenting practices might be valuable and helpful in improving children's health. Educating children on how to cope with stress is also critical in improving their health. Providing appropriate and healthy coping information to children and their families will not only help them learn how to deal with stress but also improve their health status both psychologically and physically. A healthy child is a child with a balance psychosocial and physical health status and positive self-esteem. Nurses can certainly help children and their families to promote physical and psychological health.

Culturally sensitive and developmentally appropriate health interventions are necessary to improve children's health. Since this study found that sedentary behavior plays a critical role in children's relative weight, prevention and intervention plans should focus on decreasing sedentary behavior and creating appropriate activities to substitute these sedentary behaviors. Nurses need to work with parents and communities in planning a healthy dietary and activity menu to help children lose unnecessary weight and improve their physical and psychosocial well-being. This study provides a first-step knowledge on factors related to Chinese and Chinese-American children's overweight problems. Information can help nurses and research to create developmentally and culturally appropriate nursing intervention to improve children's health.

Since this is the first study to assess family factors associated with Chinese children's obesity, future studies need to re-examine certain aspects in a larger sample size. In addition, assessment and development of culturally sensitive measures are necessary in this population. Further studies also need to include different immigrant generations to examine the degree to which acculturation attributed to children's health.

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Children's perception of their body image is also critical to examine. How Chinese children perceive their body and to what extent it affects their health and health behavior is an important of research. Additionally, the degree of difference in body image between first-generation Chinese children and second or third generations is essential to examine. Finally, qualitative research regarding cultural factors related to parents' health practices and their children's health could be helpful to describe parental beliefs and their practices regarding children's weight and health behaviors. The extent to which parents' health practice influences children's health behavior and weight and the degree to which family environment impacts children's health need to be investigated.

In conclusion, this study is the first one to examine factors associated with Chinese and Chinese-American children's health and their body mass. This study found that poor family communication, affective responsiveness, more democratic parenting, and sedentary behavior are important factors contributing to children's higher BMI. Thus, improving family functioning and parenting practices as well as teaching appropriate coping strategies and problem-solving skills can help improve children's health and maintain healthy body mass.

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3. The third part of the document is a list of the names and addresses of the members of the committee who were absent from the meeting. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. W. D. Jones, and Mr. R. L. Brown.

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1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is crucial for ensuring transparency and accountability in the organization's operations.

2. The second part of the document outlines the various methods and tools used to collect and analyze data. It highlights the need for consistent and reliable data collection processes to support effective decision-making.

**Table 1.**

*A Meta-Analysis on Randomized Experimental Childhood Obesity Study*

**Family-Based Study**

Author	Year	Tx Type (program duration)	Age (year)	Inclusion criteria	Measure	F/U	ES
Epstein	94'	Diet +exercise Mastery skill focused (16wks)	8-12	%OW >20 ( <u>M</u> =59.6)	% OW	6m 12m 24m	-1.16 -1.02 -0.59
Israel	94'	self-regulation focused on Diet +exercise (26wks)	8-13	%OW>20 ( <u>M</u> =45.9)	% OW  Skinfold	6m 12m 24m 6m 12m	-0.82 -0.27 -0.23 -0.99 0.23
Figuroa-Colon	93'	Special diet (6 months)	9-11	%OW>40 ( <u>M</u> =82.2)	BMI	6m 12m	-0.89 -0.71
Flodmark	1993	Family therapy (14-18 months)	10-11	BMI>23 ( <u>M</u> =25.1)	BMI	12m	0.49
Valoski	90'	Special diet (6 months)	<u>M</u> =9.8	%OW >20 ( <u>M</u> =35.8)	% OW	6m	-0.92
Golan	98'	Diet +exercise Parent focused (1y program)	<u>M</u> =8.3	%OW >20 ( <u>M</u> =39.6)	% OW	12m 24m	-0.71 -0.63
Duffy	93'	Diet +exercise behavioral cog focused (8wks)	7-10	%OW >20 ( <u>M</u> =48.4)	BMI	6m	-0.37
Espeitin	00'	Diet +exercise Sedentary activity(16wks)	8-12	%OW >20 ( <u>M</u> =62.7)	% OW	6m 24m	-1.93 -0.57

**School-Based Study**

Author	Year	Tx Type (program duration)	Age	Weight status	Measure	F/U	ES
Robinson	99'	Diet + exercise School-based program (6month)	9-10	<u>M</u> =18.4	% OW Skinfold Wasit-hip	6m 6m 6m	0.08 0.15 0.00
Harrell	98'	Diet + exercise school-based program (8 wks)	9-10	7.8% are OW	BMI Skinfold	12m 12m	0.03 -0.14
Figuroa	96'	Diet + exercise school-based program (16 wks)	<u>M</u> =10	%OW>20	% OW BMI	6m 2-6m	-1.13 -0.68

*Note.* OW – Overweight; F/U – follow up time; ES – effect size; M – mean; BMI – body mass index

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**Table 2.**

*Measurement Time*

Parents

Concept	Measure	Time
SES	FD-R (31 items)	10 min
Acculturation	Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA) –US sample only (26 items)	5-10 min
Family functioning	Family Assessment Device (FAD) (60 items)	10-15 min
Parenting style	Attitudes Toward Child Rearing Survey (ATCRS) (40 items)	10 -15min
Total items = 156		35- 45 min

Children

Concept	Measure	Time
Body composition	Body mass index (BMI)- body mass and stature	5 min
Physical activity	Children self-administrated physical activity checklist- Chinese revised (SAPAC) (29 items)	10-15 min
Dietary behavior	Food Frequency Questionnaire (FFQ) (50 items)	10-15 min
Coping	The Schoolagers' Coping Strategies Inventory (SCSI) (26 items)	15 min
Total items = 105		40–50 min

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**Table 3.**  
*Analysis Plan*

#	Research question	Measures	Analysis
1.a	What is the status of maternal acculturation, family communication, family interaction, parenting styles, children's dietary behavior, children's physical activity, and children's coping in Chinese families in both countries?	SL-ASIA FAD, ATCRS SAPAC, FFQ, SCSI	Mean, SD, frequency
1.b	Do family functioning and children's health practices differ between Taiwanese and Chinese-American families?	FAD, ATCRS SAPAC, FFQ, SCSI	Independent t- test
2.a	Is more effective communication in the family related to better dietary behavior and greater physical activity for children in both countries?	FAD SAPAC, FFQ	Pearson correlation
2.b	Is more effective interaction in the family related to better dietary behavior and more physical activity for children in both countries?	FAD SAPAC, FFQ	Pearson correlation
2.c	Is authoritarian parenting related to poorer dietary behavior and less physical activity for children in both countries?	ATCRS SAPAC, FFQ	Pearson correlation
3.a	Is increasing coping strategy use related to greater physical activity for children in both countries?	SCSI SAPAC	Pearson correlation
3.b	Is increasing effective coping strategy use related to healthier dietary behavior for children in both countries?	SCSI FFQ	Pearson correlation
4.a	Is higher physical activity related to lower BMI in Chinese children in both countries?	SAPAC BMI	Pearson correlation
4.b	Is poor dietary behavior related to higher BMI in Chinese children in both countries?	FFQ BMI	Pearson correlation
4.c	Is less effective family communication related to higher BMI in Chinese children in both countries?	FAD BMI	Pearson correlation
4.d	Is less effective family interaction related to higher BMI in Chinese children in both countries?	FAD BMI	Pearson correlation
4.e	Is authoritarian parenting related to higher BMI in Chinese children in both countries?	ATCRS BMI	Pearson correlation
4.f	What are the predictors on Chinese children's BMI?	FD-R FAD, ATCRS SAPAC, FFQ BMI	ANOVA Multiple linear regression

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1. The first part of the document  
 2. describes the general situation  
 3. and the objectives of the project.  
 4. It also outlines the scope of the  
 5. work and the roles of the  
 6. participants.  
 7. The second part of the document  
 8. details the methodology used in the  
 9. study, including the data collection  
 10. methods and the analysis techniques.  
 11. The third part of the document  
 12. presents the results of the study,  
 13. and the fourth part discusses the  
 14. conclusions and the implications of  
 15. the findings.

16. The document is organized into  
 17. four main sections: Introduction,  
 18. Methodology, Results, and  
 19. Conclusions. Each section is  
 20. clearly marked with a heading and  
 21. contains detailed information  
 22. relevant to that section. The  
 23. document is written in a clear and  
 24. concise style, and it is well-  
 25. organized and easy to read.





**Table 4.**

*Study demographic data*

	Total sample	Taiwan (ROC)	California (CA)	t (p)
	N=163	N=95	N=68	
Child's age	9.01 (.82)	9.02 (.82)	8.99 (.82)	.274 (.785)
Height in meter	1.361 (.09)	1.369 (.08)	1.35 (.09)	1.36 (.177)
Weight in kg	35.16 (10.21)	39.96 (1.58)	34.06 (9.62)	1.17 (.244)
BMI	18.51 (3.60)	18.62 (3.77)	18.36 (3.36)	.455 (.65)
Mother's age	38.59 (4.92)	35.94 (3.91)	42.09 (3.81)	-9.885 (.000)*
Father's age	42.10 (5.91)	39.34 (4.52)	45.75 (5.58)	-7.97 (.000)*
Mother's education in year	12.09 (3.61)	11.10 (2.77)	13.43 (4.16)	-4.01 (.000)*
Father's education in year	12.56 (3.65)	11.62 (3.01)	13.94 (4.07)	-3.83 (.000)*

*Note.* \* significant difference was found at  $p < .05$

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**Table 5.**

*Overweight classification by age and gender*

Overweight classification (BMI cut-off; 85<sup>th</sup> percentile) based on USA CDC report 2001

Gender/age	Eight years old	Nine years old	Ten years old
Boy	18	18.5	19
Girl	18.25	19	20

Taiwanese overweight classification (BMI cut-off; 85<sup>th</sup> percentile) based on Wu's report 1996

Gender/age	Eight years old	Nine years old	Ten years old
Boy	19.8	20.5	21.2
Girl	18.4	19.2	20.1

Taiwanese overweight classification (BMI cut-off; 75<sup>th</sup> percentile) based on Wu's report 1996

Gender/age	Eight years old	Nine years old	Ten years old
Boy	18.1	18.7	19.5
Girl	17.2	17.9	18.7

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**Table 6.**

*Internal consistency on each tool*

	Current study			Other study
<b>FAD</b>				Other study <sup>a</sup> Other study <sup>b</sup>
Problem solving	.73			.74            .58
Communication	.72			.70            .64
Roles	.70			.57            .54
Affective responsiveness	.69			.73            .54
Affective involvement	.64			.76            .68
Behavior control	.52			.70            .29
General functioning	.82			.83            .74
<b>ATCRS</b>				Other study <sup>c</sup>
Authoritarian	.8485			.90 (Chinese and American)
Democratic	.5282			.77 (Chinese and American)
Overall	.7547			.91 (Hinkle, 1980; American)
<b>SL-ASIA</b>				Other study <sup>d</sup>
Overall	.8010			.79-.91
<b>SCSI</b>				Other study <sup>e</sup>
Frequency	.8379			.76
Effectiveness	.8515			.73
<b>FFQ</b>	Day 1	2	3	Other study <sup>f</sup>
Fat subscale	.8129	.9158	.7992	
Sugar subscale	.7163	.7595	.7636	
Total	.8683	.9191	.8526	.91 (Chinese)

*Note.* Total sample in current study =163.

<sup>a</sup>Kabacoff (1990). <sup>b</sup>Chen (2002). <sup>c</sup>Wang and Phinney (1998). <sup>d</sup>Suinn et al (1995).

<sup>e</sup>Ryan-Weinger (1992). <sup>f</sup>Sheu and Edmundson-Drane (2001).

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**Table 7.**

*Means (SD) of tools in each country*

	Total sample (N=163)	ROC (N=95)	CA (N=68)	t (p) between sites
SL-ASIA			2.02 (.35)	
FAD- Problem solving	1.96 (.35)	1.99 (.40)	1.92 (.29)	1.102 (.272)
FAD-Communication	2.11 (.36)	2.13 (.38)	2.07 (.34)	1.016 (.311)
FAD-Roles	2.31 (.40)	2.30 (.44)	2.31 (.35)	-.144 (.886)
FAD-Affective responsiveness	2.12 (.36)	2.14 (.36)	2.09 (.36)	.853 (.395)
FAD-Affective involvement	2.21 (.41)	2.20 (.40)	2.21 (.43)	-.068 (.946)
FAD-Behavioral control	2.20 (.29)	2.21 (.28)	2.19 (.31)	.303 (.763)
FAD-General Function	2.01 (.37)	2.03 (.37)	1.97 (.37)	1.053 (.294)
ACTRS – authoritarian	1.97 (.39)	1.94 (.36)	2.01 (.33)	-1.193 (.234)
ATCRS- democratic	3.10 (.37)	3.13 (.36)	3.05 (.37)	1.377 (.170)
ATCRS- overall mean	2.36 (.25)	2.36 (.26)	2.37 (.24)	-.378 (.706)
FFQ-Fat total	17.66 (16.81)	21.76 (20.03)	11.91 (7.95)	4.339 (.000)*
FFQ-Sugar total	12.52 (10.19)	14.75 (11.84)	9.40 (6.14)	3.761 (.000)*
FFQ-Overall total	30.17 (24.39)	36.52 (28.67)	21.31 (12.20)	4.618 (.000)*
MVPA METs (in MET)	511.31 (506.04)	558.36 (564.09)	445.59 (406.49)	1.48 (.140)
MVPA minutes	92.31 (78.80)	98.57 (84.55)	83.58 (69.66)	1.238 (.218)
Sedentary activity minutes	143.34 (125.02)	142.82 (134.98)	144.08 (110.60)	-.066 (.948)
SCSI-Frequency	24.67 (10.50)	22.38 (10.61)	27.82 (9.54)	-3.358 (.001)*
SCSI-Effectiveness	30.30 (12.45)	25.72 (11.67)	36.63 (10.66)	-6.089 (.000)*

*Note.* \* significant difference was found at  $p < .05$ . SD and p value in parenthesis

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. W. B. Jones, and Mr. C. D. Brown, among others.

2. The second part of the document is a list of the names and addresses of the members of the committee who were present at the meeting. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. W. B. Jones, and Mr. C. D. Brown, among others.



**Table 8.**

*Top five most frequently mentioned coping strategies by country*

<b>List</b>	<b>ROC</b>	<b>CA</b>
1	Eat and drink (81.9%)	Drawing, reading and writing (91.2%)
2	Drawing, reading and writing (81.1%)	Try to forget about it (88.2%)
3	Watching TV (74.5%)	Think about it (88.2%)
4	Do work around the house (72.6%)	Try to relax (88.2%)
5	Play a game (71.3%)	Play a game (88.2%)



Table 9.

*Top five most effective coping strategies by country*

List	ROC	CA
1	Drawing, reading and writing (89.3%)	Pray (97.6%)
2	Do work around the house (88.6%)	Drawing, reading and writing (95.1%)
3	Walk or run (82.8%)	Say I am sorry or tell the truth (94.9%)
4	Try to relax (78.6%)	Try to relax (93.3%)
5	Pray (77.8%)	Do work around the house (2.9%)

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is crucial for ensuring transparency and accountability in the organization's operations.

2. The second part of the document outlines the various methods and tools used to collect and analyze data. It highlights the need for consistent and reliable data collection processes to support informed decision-making.

Table 10.

*Top five most mentioned stressor by country*

List	ROC	CA
1	School work (37.7%)	School work (29.4%)
2	Examination (21.6%)	Friendship (11%)
3	Study (14%)	Play piano (11%)
4	Parent issues (7.2%)	Parent issues (5.9%)
5	Extra school work (4.3%)	Make mistakes (5.9%)

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1. The first part of the document  
 2. describes the general situation  
 3. and the objectives of the project.  
 4. It also outlines the scope of the  
 5. work and the roles of the  
 6. participants.

7. The second part of the document  
 8. details the methodology used for  
 9. data collection and analysis.  
 10. This includes a description of the  
 11. instruments used and the procedures  
 12. followed.

13. The third part of the document  
 14. presents the results of the study  
 15. and discusses their implications.  
 16. It also includes a conclusion  
 17. and recommendations for future  
 18. research.

19. The final part of the document  
 20. contains the references and the  
 21. appendix.

Table 11.

*Pearson correlation coefficient*

	BMI	FFQ-Fat	FFQ-Sugar	FFQ-Total	MVPA METs	MVPA minutes	Sedentary
BMI	1.00	-.031 (.690)	-.007 (.928)	-.025 (.755)	.141 (.073)	.142 (.070)	.153 (.051)
FAD-Problem solving	.145 (.064)	.045 (.565)	.135 (.085)	.088 (.265)	-.072 (.358)	-.119 (.129)	-.036 (.645)
FAD-communication	.184 (.018)*	.041 (.603)	.096 (.225)	.068 (.387)	.001 (.993)	.001 (.993)	-.024 (.764)
FAD-Roles	.134 (.087)	.007 (.931)	-.054 (.496)	-.018 (.822)	-.088 (.262)	-.102 (.194)	-.151 (.054)
FAD-Affective responsiveness	.098 (.216)	.191 (.015)*	.203 (.009)*	.216 (.006)*	-.087 (.267)	-.090 (.251)	.016 (.836)
FAD-Affective involvement	-.020 (.795)	.038 (.650)	.011 (.886)	.029 (.709)	.018 (.816)	.030 (.708)	-.013 (.868)
FAD-behavioral control	.001 (.994)	-.018 (.821)	-.037 (.641)	-.028 (.725)	-.017 (.828)	-.004 (.957)	-.074 (.346)
FAD-general functioning	.061 (.439)	.077 (.328)	.067 (.393)	.081 (.303)	-.096 (.223)	-.123 (.119)	-.094 (.231)
SL-ASIA	-.010 (.933)	-.011 (.927)	.009 (.943)	-.003 (.981)	.036 (.773)	-.046 (.711)	.131 (.288)
ATCRS	-.199 (.011)*	-.058 (.464)	-.133 (.092)	-.095 (.226)	.000 (.996)	-.035 (.653)	-.034 (.665)
SCSI-frequency	-.032 (.682)	.081 (.305)	.125 (.113)	.108 (.171)	.028 (.720)	.013 (.868)	.068 (.389)
SCSI-effectiveness	-.026 (.741)	-.032 (.686)	.032 (.686)	-.009 (.912)	.015 (.849)	.002 (.978)	.116 (.142)
FFQ-Fat	-.031 (.690)	1.00	.608 (.000)*	.943 (.000)*	.129 (.101)	.116 (.140)	.002 (.976)
FFQ-Sugar	-.007 (.930)	.608 (.000)*	1.00	.837 (.000)*	.134 (.089)	.145 (.065)	.028 (.719)
FFQ-Total	-.025 (.760)	.943 (.000)*	.837 (.000)*	1.00	.145 (.065)	.141 (.073)	.013 (.864)
MVPA METs	.141 (.073)	.129 (.101)	.134 (.089)	.145 (.065)	1.00	.965 (.000)*	.143 (.068)
MVPA minutes	.142 (.070)	.116 (.140)	.145 (.065)	.141 (.073)	.965 (.000)*	1.00	.135 (.086)
Sedentary minutes	.153 (.05)*	.002 (.976)	.028 (.719)	.013 (.864)	.143 (.068)	.135 (.086)	1.00

*Note.* \* significant difference was found at  $p < .05$  and  $p$  value in parenthesis

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. B. Smith, Mr. W. H. Jones, and Mr. C. D. Brown, among others.

2. The second part of the document is a list of the names and addresses of the members of the committee who were present at the meeting. This list is also in alphabetical order and includes names such as Mr. J. B. Smith, Mr. W. H. Jones, and Mr. C. D. Brown, among others.



Table 12.

*Stepwise multiple regression summary table*

Dependent variable: BMI

N=163

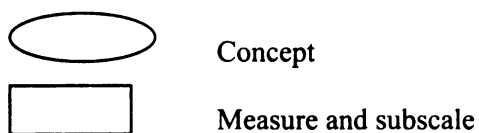
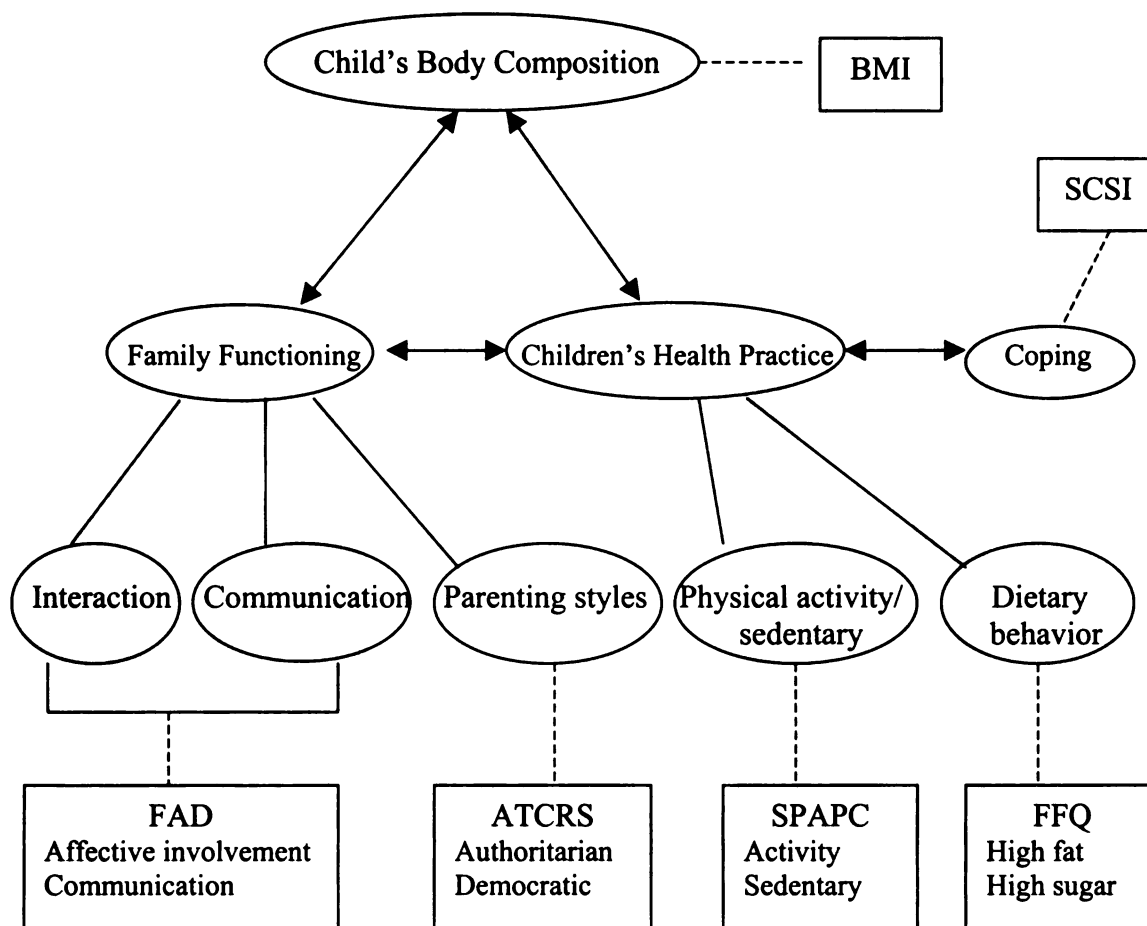
Source	R <sup>2</sup>	beta	sr <sup>2</sup>	df	F	p
Overall	.114			4,158	5.086	.001
Step 1						
Country		-.306	.001	1, 161	.207	.650
Step 2						
Communication		.234	.0524	4,158	9.3208	.003
ATCRS		-.239	.0547	4,158	9.7719	.002
Sedentary activity		.151	.0225	4,158	4.0361	.046

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. W. D. Jones, and Mr. R. L. Brown.

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**Figure 1.**

*Study framework*



*Note.*

FAD- Family assessment device

ATCRS – Attitudes toward child-rearing practice survey

SAPAC-Schoolagers physical activity checklist

FFQ-Food frequency questionnaire

SCSI-Schoolages coping strategy inventory

Arrows for directional relationships, dotted lines indicate study measure for concept and straight lines for components of the concepts.

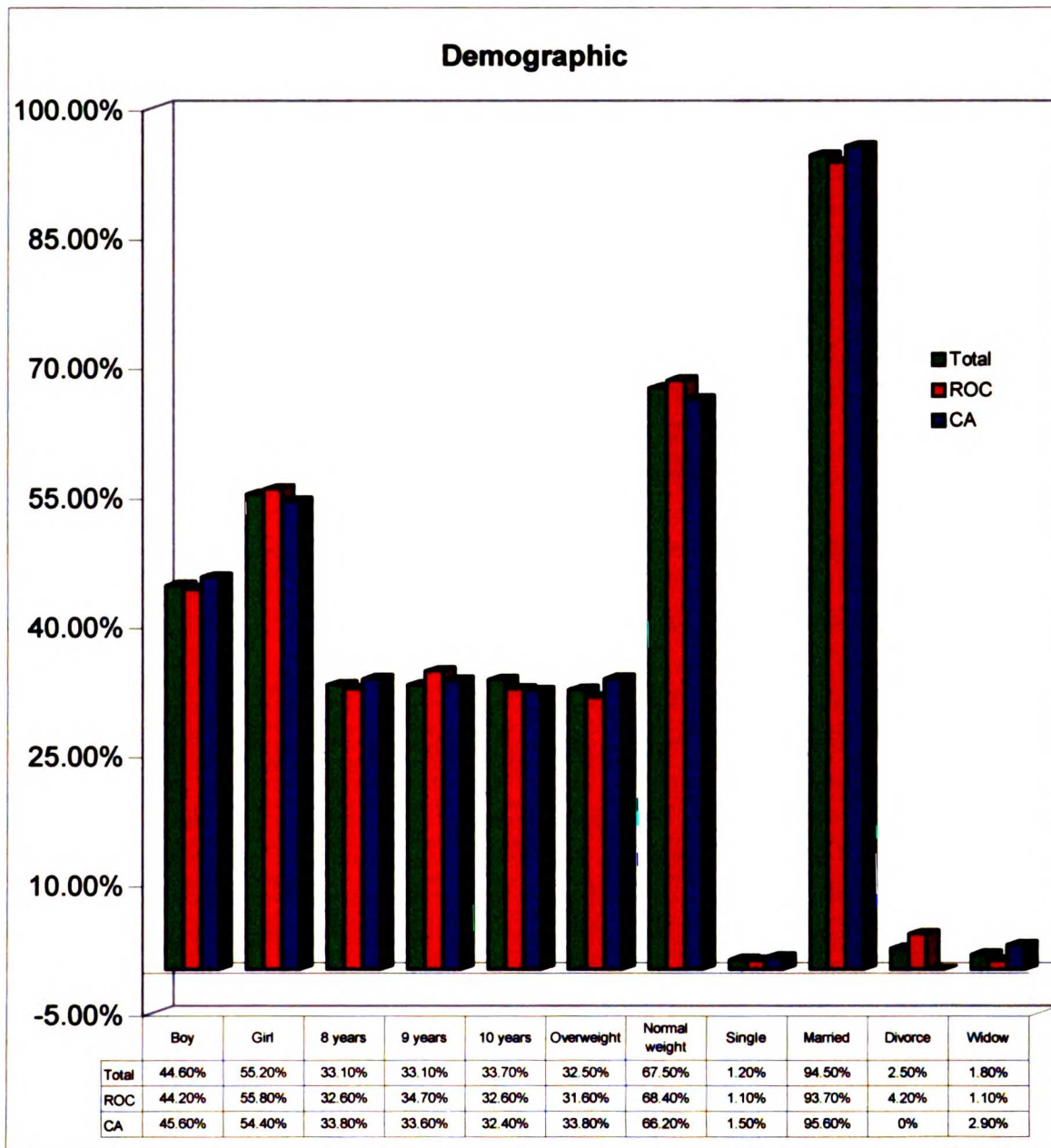
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Figure 2.

Demographic



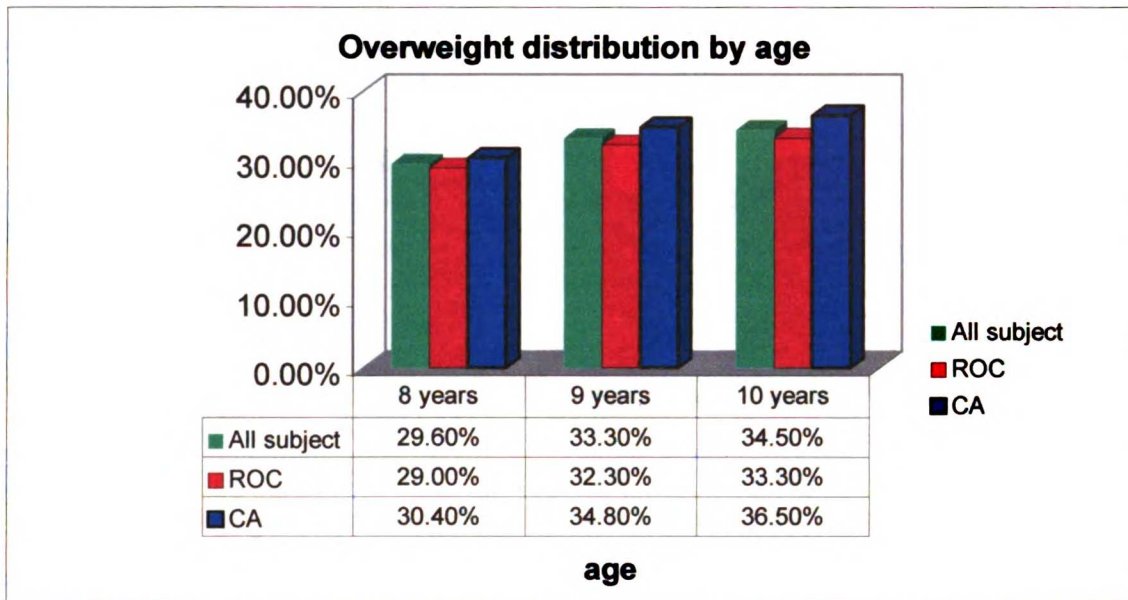
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Figure 3.

*Overweight distribution by age*



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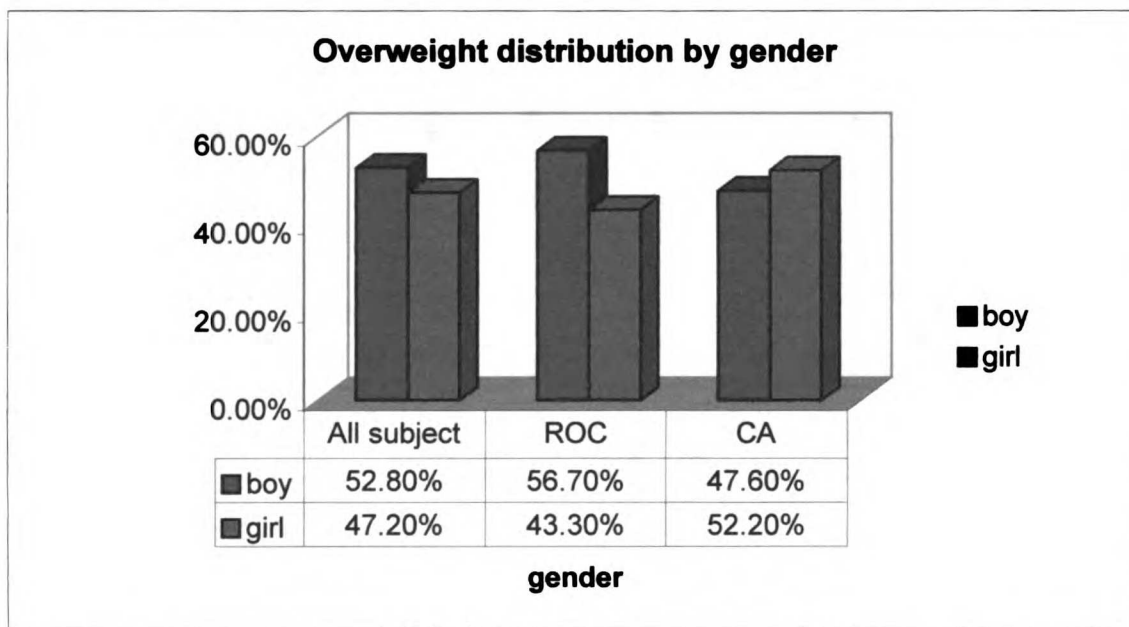
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**Figure 4.**

*Overweight distribution by gender*

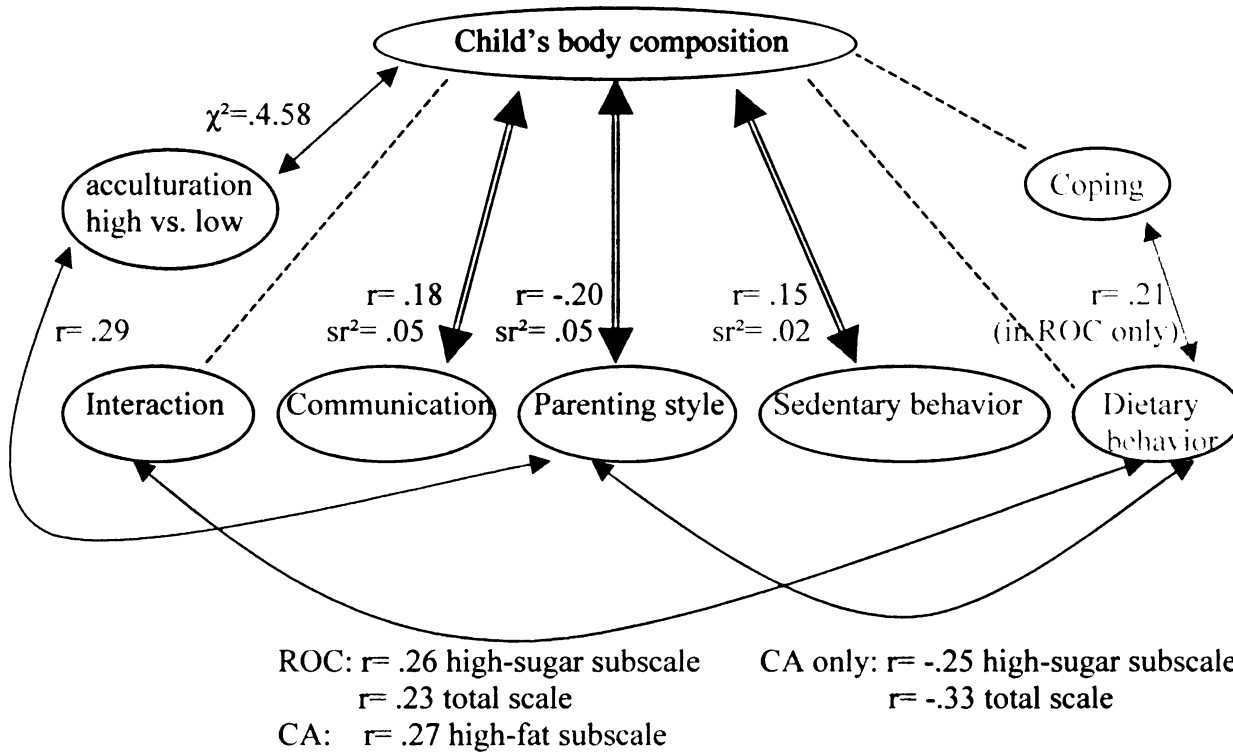


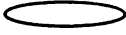



1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. J. B. Jones, and Mr. W. C. Brown.

2. The second part of the document is a list of the names and addresses of the members of the committee who were present at the meeting. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. J. B. Jones, and Mr. W. C. Brown.

**Figure 5.**

*Findings within study framework*



-  Concept
-  Significant relationship
-  Predictor of children's BMI
-  Non-significant relationship

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Consent to Participate in a Research Study



**Project title:** Factors associated with weight in Chinese-American children

**Purpose:** Because you are the parent of an 8 to 10 year old child, you are asked to allow him or her to participate in this study. Dr. Christine M. Kennedy, Associate Professor, and Ms. Jyu-Lin Chen, a doctoral student, at the University of California, San Francisco are trying to understand factors associated with childhood health in Chinese-American children and questionnaires used in examining these factors.

If your child participates in this study, you will fill out questionnaires once on your family and health. Your child will also be checked with weight and height and she/he will fill out three questionnaires measuring his/her health.

**Procedures:** If your family agrees to participate in this study the following will happen:

1. One parent (the mother) and one child from each family will be asked to complete questionnaires on family, family functioning, parenting styles, and behavior. These questions are about you and your family and your child's TV viewing habits. These questionnaires will take approximately 30-45 minutes to complete.
2. Your child will be asked to have their weight and height status measured and complete three questionnaires on health, coping, and behaviors. These questionnaires will take 30-45 minutes to finish.

**Risks/Discomforts:** There are no known physical risks or discomforts associated with participation in this study. Some participants may experience discomfort at the self-reflective and personal nature of questions that ask them about relationships within their family. If you experiences such discomfort you can decline to participate in the study or decline to answer any particular question.

**Confidentiality:** Participation in research can cause a loss of privacy. In this study your child and you will be asked about your family, health, and lifestyle. The information provided will be kept as confidential as possible. Neither your name nor your child's name will be used in any published reports about this study.

**Benefits:** There are no direct benefits to participants in this study, however, the information you and your child provide will benefit health care providers by allowing them to better understand factors associated with childhood weight, physical activity, and TV viewing.

**Costs/Reimbursements:** In appreciation of your family's time in completing the questions and for participating in this study, your child will receive a health-promoting information book at the end of the study. In addition, your family will receive a \$10 gift certificate.

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**Questions:** This study has been explained to you by Dr. Christine Kennedy or Ms. Jyu-Lin Chen. If you have further questions about this study, you may call Ms. Jyu-Lin Chen at The Young Children's Health Project, University of California, San Francisco (415) 476-4697.

If you have any comments or concerns about participation in this study, you should first talk with the researchers. If for some reason you do not wish to do this, you may contact the Committee on Human Research, which is concerned with the protection of volunteers in research projects. You may reach the committee office between 8:00 am and 5:00 pm, Monday through Friday, by calling (415) 476-1814, or by writing: Committee on Human Research, Box 0962, University of California, San Francisco, San Francisco, CA, 94143.

**Rights:** I have received a copy of the consent form and have been given a copy of the Experimental Subject's Bill of Rights. If I feel uncomfortable answering any of the questions I have the right to skip that question or stop at any time that I feel necessary.

I give Dr. Kennedy and Ms. Jyu-Lin Chen permission to contact me via telephone for any future studies they would like to invite me to participate in by initialing here \_\_\_\_\_. Please do not contact me to invite me to participate in any future studies \_\_\_\_\_.

**MY PARTICIPATION IN THIS RESEARCH IS VOLUNTARY. I HAVE THE RIGHT TO DECLINE TO PARTICIPATE OR WITHDRAW MYSELF OR MY CHILD AT ANY POINT IN THIS STUDY.**

I am making a decision whether or not to participate in this study. My signature indicates that I have decided to participate after reading the information above.

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Signature of Study Participant

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Date

\_\_\_\_\_  
Signature of Person obtaining consent

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Consent to Participate in a Research Study

加州大學舊金山大學分校

護理系

研究計劃參予同意書



**研究主題：**華裔兒童體重健康相關因素探討

**研究目的：**此研究是由加州大學舊金山大學分校護理系副教授簡詩潔博士 (Dr. Christine Kennedy) 及博士班研究生陳姿利小姐共同參予。目的在深入了解兒童體重健康相關因素及問卷調查的適用性。  
由於您的孩子年齡在八及十歲因此被邀請參予這項研究。

如果您的孩子參加這項研究，您們將會回答有關家庭情形及健康狀態的問卷。您將會回答四份問卷，您的孩子將會回答三份問卷及測量身高體重。

**研究過程：**如果您與家人同意參予這項研究 以下是研究過程

每個家庭兒童的主要照顧者需要回答有關家庭情形、父母管教方式，及健康狀態的問卷。這些問卷大約需要三十至四十五分鐘來完成。

您的孩子被測量身高體重及回答三份問卷。這些問卷大約需要三十至四十五分鐘來完成。

**研究相關之不適：**參予這項研究並無危險或不適情形。有些參予者對回答有關私人或家庭問題感到不安，如果在參予研究過程中您有此感受您可以退出研究或拒絕回答問題。

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我參予研究的決定將由我的簽名得知  
我的簽名表示在讀過上述資料我同意參予此研究

\_\_\_\_\_  
父/母 或兒童監護人簽名

\_\_\_\_\_  
日期

\_\_\_\_\_  
研究員簽名

\_\_\_\_\_  
日期

08/24/01



University of California, San Francisco  
School of Nursing

Consent to Participate in a Research Study

**Project title:** Factors associated with weight in Chinese children in Taiwan

**Purpose:** Because you are the parent of an 8 to 10 year old child, you are asked to allow your child or her to participate in this study. Dr. Christine M. Kennedy, Associate Professor, and Ms. Jyu-Lin Chen, a doctoral student, at the University of California, San Francisco are trying to understand factors associated with childhood weight in Chinese children in Taiwan and questionnaires used in examining these factors.

If your child participates in this study, you will fill out questionnaires once on your family and health. Your child will also be checked with weight and height and three questionnaires measuring his/her health.

**Procedures:** If your family agrees to participate in this study the following will happen:

1. One parent (the primary caregiver) and one child from each family will be asked to complete questionnaires on family, family functioning, and behavior. These questions are about you and your family and your child's TV viewing habits. These questionnaires will take approximately 30 minutes to complete.
2. Your child will be asked to check weight and height status and complete three questionnaires on health, coping, and behaviors. These questionnaires will take 30-45 minutes to finish.

**Risks/Discomforts:** There are no known physical risks or discomforts associated with participation in this study. Some participants may experience discomfort at the self-reflective and personal nature of questions that ask them about relationships within their family. If you experiences such discomfort you can decline to participate in the study or decline to answer any particular question.

**Confidentiality:** Participation in research can cause a loss of privacy. In this study your child and you will be asked about your family, health, and lifestyle. The information provided will be kept as confidential as possible. Neither your name nor your child's name will be used in any published reports about this study.

**Benefits:** There are no direct benefits to participants in this study, however, the information you and your child provide will benefit health care providers by allowing them to better understand factors associated with childhood obesity, physical activity, and TV viewing.

**Costs/Reimbursements:** There will be no cost for your child to have his/her weight status examined. In appreciation of your family's time in completing the questions and for participating in this study, your child will receive a health-promoting information book at the end of the study.



1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for ensuring transparency and accountability in financial reporting.

2. The second part of the document outlines the various methods and techniques used to collect and analyze data. It highlights the need for consistent and reliable data collection processes to ensure the validity of the results.

**Questions:** This study has been explained to you by Dr. Christine Kennedy or Ms. Jyu-Lin Chen. If you have further questions about this study, you may call Ms. Jyu-Lin Chen at The Young Children's Health Project, University of California, San Francisco (415) 476-4697 or at Taiwan (07) 791-2321.

If you have any comments or concerns about participation in this study, you should first talk with the researchers. If for some reason you do not wish to do this, you may contact the Committee on Human Research, which is concerned with the protection of volunteers in research projects. You may reach the committee office between 8:00 am and 5:00 pm, Monday through Friday, by calling (415) 476-1814, or by writing: Committee on Human Research, Box 0962, University of California, San Francisco, San Francisco, CA, 94143.

**Rights:** I have received a copy of the consent form and have been given a copy of the Experimental Subject's Bill of Rights. If I feel uncomfortable answering any of the questions I have the right to skip that question or stop at any time that I feel necessary.

I give Dr. Kennedy and Ms. Jyu-Lin Chen permission to contact me via telephone for any future studies they would like to invite me to participate in by initialing here \_\_\_\_\_. Please do not contact me to invite me to participate in any future studies \_\_\_\_\_.

**MY PARTICIPATION IN THIS RESEARCH IS VOLUNTARY. I HAVE THE RIGHT TO DECLINE TO PARTICIPATE OR WITHDRAW MYSELF OR MY CHILD AT ANY POINT IN THIS STUDY.**

I am making a decision whether or not to participate in this study. My signature indicates that I have decided to participate after reading the information above.

\_\_\_\_\_  
Signature of Study Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Person obtaining consent

\_\_\_\_\_  
Date

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud.

2. The second part of the document outlines the specific requirements for record-keeping, including the need to maintain original documents and to ensure that all records are properly indexed and filed.



University of California, San Francisco  
School of Nursing

Consent to Participate in a Research Study

加州大學舊金山大學分校

護理系

研究計劃參予同意書



**研究主題：**台灣兒童體重健康相關因素探討

**研究目的：**此研究是由加州大學舊金山大學分校護理系副教授簡詩潔博士 (Dr. Christine Kennedy) 及博士班研究生陳姿利小姐共同參予。目的在深入了解兒童體重健康相關因素及問卷調查的適用性。由於您的孩子年齡在八及十歲因此被邀請參予這項研究。

如果您的孩子參加這項研究，您們將會回答有關家庭情形及健康狀態的問卷。您將會回答三份問卷，您的孩子將會回答三份問卷及測量身高體重。

**研究過程：**如果您與家人同意參予這項研究 以下是研究過程

每個家庭兒童的主要照顧者需要回答有關家庭情形及健康狀態的問卷。這些問卷大約需要三十分鐘來完成。

您的孩子被測量身高體重及回答三份問卷。這些問卷大約需要三十至四十五分鐘來完成。

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\_\_\_\_\_  
父/母 或兒童監護人簽名

\_\_\_\_\_  
日期

\_\_\_\_\_  
研究員簽名

\_\_\_\_\_  
日期

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1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. J. B. Jones, and Mr. W. C. Brown.

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Please indicate the best answer to the following questions regarding you and your family

1. What is your date of birth \_\_\_\_\_
2. What is your child's age \_\_\_\_\_
3. What is your marital status?
  - Single
  - Married
  - Separated
  - Divorced
  - Widowed
  - Other, please Explain \_\_\_\_\_
4. In what country were you born?
  - USA
  - Taiwan
  - Hong Kong
  - Indonesia
  - Singapore
  - Mainland China
  - Other, please Explain \_\_\_\_\_
5. How long have you been in the United States? (in years) \_\_\_\_\_
6. At what age did you arrive in the United States \_\_\_\_\_
7. What is your usual occupation or employment? \_\_\_\_\_
8. How much do you work outside of the home?
  - none
  - 1-10 hours
  - 11-30 hours
  - 31-40 hours
  - over 40
9. How satisfied are you with your current working status?
  - Strongly dissatisfied
  - Mildly dissatisfied
  - Neither
  - Mildly satisfied
  - Strongly satisfied

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10. What is the total annual income for your household: your job, plus whatever is brought in by others living with you?
- |  |   |
|--|---|
| <input type="checkbox"/> Less than \$5000  | <input type="checkbox"/> \$25,000-\$29,999  |
| <input type="checkbox"/> \$5000-\$9,999    | <input type="checkbox"/> \$30,000-\$34,999  |
| <input type="checkbox"/> \$10,000-\$14,999 | <input type="checkbox"/> \$35,000-\$39,999  |
| <input type="checkbox"/> \$15,000-\$19,999 | <input type="checkbox"/> More than \$40,000 |
| <input type="checkbox"/> \$20,000-\$24,999 |   |
11. How much of the household income comes from your employment?
- none  
 1/4  
 1/2  
 3/4  
 All
12. How many years of school have you completed? \_\_\_\_\_ years
13. Are you attending school now?
- Yes, full time  
 Yes, part time  
 No
14. What kind of residence do you live in?
- House  
 Apartment
15. Do you own or rent?
- Own  
 Rent
16. How many of the following people are currently living with you ? (please check all that apply)
- |  |  |
|--|--|
| <input type="checkbox"/> husband       | <input type="checkbox"/> Grandparent(s)  |
| <input type="checkbox"/> partner       | <input type="checkbox"/> Aunt/uncle(s)   |
| <input type="checkbox"/> son(s)        | <input type="checkbox"/> In-laws         |
| <input type="checkbox"/> daughters     | <input type="checkbox"/> Other relatives |
| <input type="checkbox"/> step-children | <input type="checkbox"/> Friends         |
| <input type="checkbox"/> parent(s)     | <input type="checkbox"/> Other _____     |
17. Where was your mother born?
- USA  
 Taiwan  
 Hong Kong  
 Indonesia  
 Singapore  
 Mainland China  
 Other \_\_\_\_\_

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18. Where was your father born?

- USA
- Taiwan
- Hong Kong
- Indonesia
- Singapore
- Mainland China
- Other \_\_\_\_\_

19. If you were not born in the U.S, what's the reason of your immigration?

---

**Please answer the following questions about your child's father**

20. What is his date of birth? \_\_\_\_\_

21. Which group (or groups) best describes him?

- Hispanic/Latino
- Black
- White
- Chinese
- Other \_\_\_\_\_

22. What is his usual occupation or employment? \_\_\_\_\_

23. Is he presently employed?

- Yes, full time
- Yes, part time
- No

24. How many years of education has he completed? \_\_\_\_\_ years

25. Is he attending school now?

- Yes, full time
- Yes, part time
- No

26. Where was your child's paternal grandmother born?

- USA
- Taiwan
- Hong Kong
- Indonesia
- Singapore
- Mainland China
- Other \_\_\_\_\_



Date \_\_\_\_\_

RA \_\_\_\_\_

ID \_\_\_\_\_

27. Where was your child's paternal grandfather born?

- USA
- Taiwan
- Hong Kong
- Indonesia
- Singapore
- Mainland China
- Other \_\_\_\_\_

28. In what country was your child's father born?

- USA
- Taiwan
- Hong Kong
- Indonesia
- Singapore
- Mainland China
- Other \_\_\_\_\_

29. How long has your child's father lived in the United States? (in years) \_\_\_\_\_

30. At what age did your child's father arrive in the United States? \_\_\_\_\_

31. If he was not born in the U.S, what's his reason of immigration?

\_\_\_\_\_



請在下列勾選或回答有關您與您家庭的一些基本資料

1. 您的出生日期\_\_\_\_\_
2. 您孩子的年齡\_\_\_\_\_
3. 您的婚姻狀況
  - 未婚       已婚       與丈夫分居       離婚       寡婦
  - 其它\_\_\_\_\_
4. 您的出生處
  - 美國       台灣       香港       印尼       新加坡       中國大陸
  - 其它\_\_\_\_\_
5. 您在美國居住了幾年\_\_\_\_\_
6. 您幾歲到達美國\_\_\_\_\_
7. 您的職業\_\_\_\_\_
8. 您每星期在外工作的時數
  - 沒有在外工作     1 到 10 小時       11 到 30 小時       31 到 40 小時
  - 超過 40 小時
9. 您對您目前工作的滿意程度 (1 : 非常不滿意 ; 5 : 非常滿意)
  - 非常不滿意 (1)
  - 不滿意 (2)
  - 不算滿意但也沒有不滿意 (3)
  - 滿意 (4)
  - 非常滿意 (5)
10. 下列那一項最適當的描述您家中一年的所有所得，這包含您的工作所得以及與您共同居住在同一家中家人的所得？
  - 少於 \$5,000               \$ 5,001 到 \$9,999               \$ 10,000 到 \$14,999
  - \$ 15,000 到 \$19,999       \$ 20,000 到 \$24,999               \$ 25,000 到 \$29,999
  - \$ 30,000 到 \$34,999       \$ 35,000 到 \$39,999               超過 \$ 40,000
11. 您工作的所得是家中所有所得的幾分之幾？
  - 沒有工作所得     四分之一 (1/4)     二分之一 (1/2)     四分之三 (3/4)
  - 全部

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12. 您接受過幾年的學校教育 \_\_\_\_\_ 年
13. 您現在是否有在學校上學？
- 是，全職學生
- 是，半職學生
- 否
14. 您現在的住所是屬於那一種類別？
- 一般房子建築
- 公寓
15. 您是否擁有現在的住所？
- 是
- 否
16. 請在下列勾選出與您共同居住在同一房子的人
- 配偶     同居人     兒子     女兒     繼兒女     父母
- 祖父母     叔伯姑孀     配偶父母     其它親戚     朋友     其它\_\_\_\_\_
17. 您母親的出生地
- 美國     台灣     香港     印尼     新加坡     中國大陸
- 其它 \_\_\_\_\_
18. 您父親的出生地
- 美國     台灣     香港     印尼     新加坡     中國大陸
- 其它 \_\_\_\_\_
19. 您若不是在美國出生，您移民來美國的原因？ \_\_\_\_\_

請在下列回答有關孩子父親的資料

20. 孩子父親的出生日期 \_\_\_\_\_
21. 他是屬於那一個種族
- 拉丁人     黑人     白人     中國人     其它 \_\_\_\_\_
22. 他的職業 \_\_\_\_\_
23. 他目前的職業狀態
- 全職     半職     無業

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24. 他接受過幾年的學校教育 \_\_\_\_\_ 年
25. 他現在是否有在學校上學？  
 是，全職學生  
 是，半職學生  
 否
26. 他的母親的出生地  
 美國     台灣     香港     印尼     新加坡     中國大陸  
 其它 \_\_\_\_\_
27. 他的父親的出生地  
 美國     台灣     香港     印尼     新加坡     中國大陸  
 其它 \_\_\_\_\_
28. 他的出生地  
 美國     台灣     香港     印尼     新加坡     中國大陸  
 其它 \_\_\_\_\_
29. 他在美國居住了幾年 \_\_\_\_\_
30. 他幾歲到達美國 \_\_\_\_\_
31. 他若不是在美國出生，他移民來美國的原因？ \_\_\_\_\_

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**SUINN-LEW ASIAN SELF-IDENTITY ACCULTURATION SCALE  
(SL-ASIA)**

**INSTRUCTIONS:** The questions which follow are for the purpose of collecting information about your historical background as well as more recent behaviors which may be related to your cultural identity. Choose the one answer which best describes you.

1. What language can you speak?

1. Asian only (for example, Chinese, Japanese, Korean, Vietnamese, etc.)
2. Mostly Asian, some English
3. Asian and English about equally well (bilingual)
4. Mostly English, some Asian
5. Only English

2. What language do you prefer?

1. Asian only (for example, Chinese, Japanese, Korean, Vietnamese, etc.)
2. Mostly Asian, some English
3. Asian and English about equally well (bilingual)
4. Mostly English, some Asian
5. Only English

3. How do you identify yourself?

1. Oriental
2. Asian
3. Asian-American
4. Chinese-American, Japanese-American, Korean-American, etc.
5. American

4. Which identification does (did) your mother use?

1. Oriental
2. Asian
3. Asian-American
4. Chinese-American, Japanese-American, Korean-American, etc.
5. American

5. Which identification does (did) your father use?

1. Oriental
2. Asian
3. Asian-American
4. Chinese-American, Japanese-American, Korean-American, etc.
5. American

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. W. B. Jones, and Mr. C. D. Brown, along with their respective addresses in various cities and states.

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6. What was the ethnic origin of the friends and peers you had, as a child up to age 6?

1. Almost exclusively Asians, Asian-Americans, Orientals
2. Mostly Asians, Asian-Americans, Orientals
3. About equally Asian groups and Anglo groups
4. Mostly Anglos, Blacks, Hispanics, or other non-Asian ethnic groups
5. Almost exclusively Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

7. What was the ethnic origin of the friends and peers you had, as a child from 6 to 18?

1. Almost exclusively Asians, Asian-Americans, Orientals
2. Mostly Asians, Asian-Americans, Orientals
3. About equally Asian groups and Anglo groups
4. Mostly Anglos, Blacks, Hispanics, or other non-Asian ethnic groups
5. Almost exclusively Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

8. Whom do you now associate with in the community?

1. Almost exclusively Asians, Asian-Americans, Orientals
2. Mostly Asians, Asian-Americans, Orientals
3. About equally Asian groups and Anglo groups
4. Mostly Anglos, Blacks, Hispanics, or other non-Asian ethnic groups
5. Almost exclusively Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

9. If you could pick, whom would you prefer to associate with in the community?

1. Almost exclusively Asians, Asian-Americans, Orientals
2. Mostly Asians, Asian-Americans, Orientals
3. About equally Asian groups and Anglo groups
4. Mostly Anglos, Blacks, Hispanics, or other non-Asian ethnic groups
5. Almost exclusively Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

10. What is your music preference?

1. Only Asian music (for example, Chinese, Japanese, Korean, Vietnamese, etc.)
2. Mostly Asian
3. Equally Asian and English
4. Mostly English
5. English only

11. What is your movie preference?

1. Asian-language movies only
2. Asian-language movies mostly
3. Equally Asian/English English-language movies
4. Mostly English-language movies only
5. English-language movies only

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2. The second part of the document is a list of the names and addresses of the members of the committee who have been appointed to the various sub-committees. The names are listed in alphabetical order, and the addresses are given in full. The list includes names such as Mr. J. H. Smith, Mr. W. B. Jones, and Mr. C. D. Brown, among others.

12. What generation are you? (circle the generation that best applies to you:)

- 1 1st Generation = I was born in Asia or country outside the U.S.
- 2 2nd Generation = I was born in U.S., either parent was born in Asia or country outside the U.S.
- 3 3rd Generation = I was born in U.S., both parents were born in U.S, and all grandparents born in Asia or country outside the U.S.
- 4 4th Generation = I was born in U.S., both parents were born in U.S, and at least one grandparent born in Asia or country outside the U.S. and one grandparent born in U.S.
- 5 5th Generation = I was born in U.S., both parents were born in U.S., and all grandparents also born in U.S.
- 6 Don't know what generation best fits since I lack some information.

13. Where were you raised?

1. In Asia only
2. Mostly in Asia, some in U.S.
3. Equally in Asia and U.S.
4. Mostly in U.S., some in Asia
5. In U.S. only

14. What contact have you had with Asia?

1. Raised one year or more in Asia
2. Lived for less than one year in Asia
3. Occasional visits to Asia
4. Occasional communications (letters, phone calls, etc.) with people in Asia
5. No exposure or communications with people in Asia

15. What is your food preference at home?

1. Exclusively Asian food
2. Mostly Asian food, some American
3. About equally Asian and American
4. Mostly American food
5. Exclusively American food

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16. What is your food preference in restaurants?

1. Exclusively Asian food
2. Mostly Asian food, some American
3. About equally Asian and American
4. Mostly American food
5. Exclusively American food

17. Do you

1. read only an Asian language
2. read an Asian language better than English
3. read both Asian and English equally well
4. read English better than an Asian language
5. read only English

18. Do you

1. write only an Asian language
2. write an Asian language better than English
3. write both Asian and English equally well
4. write English better than an Asian language
5. write only English

19. If you consider yourself a member of the Asian group (Oriental, Asian, Asian-American, Chinese-American, etc., whatever term you prefer), how much pride do you have in this group?

1. Extremely proud
2. Moderately proud
3. Little pride
4. No pride but do not feel negative toward group
5. No pride but do feel negative toward group

20. How would you rate yourself?

1. Very Asian
2. Mostly Asian
3. Bicultural
4. Mostly Westernized
5. Very Westernized

21. Do you participate in Asian occasions, holidays, traditions, etc.?

1. Nearly all
2. Most of them
3. Some of them
4. A few of them
5. None at all

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**說明：** 以下問題是關於你的一些背景資料，和文化認同行為資料，請你圈選一個恰當描述你的答案。

.....

**1. 你會說什麼語言？**

- i. 只有亞洲話 (譬如，中文、日文、韓文、越南話，等等)
- ii. 大部分中文，一些英文
- iii. 亞洲話和英文一樣好 (雙語)
- iv. 大部分英文，一些亞洲話
- v. 只有英文

**2. 你更喜歡使用那種語言？**

- i. 只有亞洲話 (譬如，中文、日文、韓文、越南話，等等)
- ii. 大部分中文，一些英文
- iii. 亞洲話和英文一樣好 (雙語)
- iv. 大部分英文，一些亞洲話
- v. 只有英文

**3. 你如何認同你自己？**

- i. 東方人
- ii. 亞洲人
- iii. 亞裔美國人

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud.

2. The second part of the document outlines the specific requirements for record-keeping, including the need to maintain original documents and to ensure that all records are properly indexed and filed.

iv. 華裔美國人，日裔美國人，韓裔美國人，等等

v. 美國人

4. 你母親如何認同她自己？

i. 東方人

ii. 亞洲人

iii. 亞裔美國人

iv. 華裔美國人，日裔美國人，韓裔美國人，等等

v. 美國人

5. 你父親如何認同他自己？

i. 東方人

ii. 亞洲人

iii. 亞裔美國人

iv. 華裔美國人，日裔美國人，韓裔美國人，等等

v. 美國人

6. 六歲以前，你的朋友同儕是那些種族的？

i. 完全是亞洲人，亞裔美國人，東方人

ii. 大部分是亞洲人，亞裔美國人，東方人

iii. 一半亞洲人，一半歐裔人

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- iv. 大部分歐裔人，黑人，拉丁人，或者其他非亞洲人
- v. 完全歐裔人，黑人，拉丁人，或者其他非亞洲人

7. 從 6 歲到 18 歲，你的朋友同儕是那些種族的？

- i. 完全是亞洲人，亞裔美國人，東方人
- ii. 大部分是亞洲人，亞裔美國人，東方人
- iii. 一半亞洲人，一半歐裔人
- iv. 大部分歐裔人，黑人，拉丁人，或者其他非亞洲人
- v. 完全歐裔人，黑人，拉丁人，或者其他非亞洲人

8. 目前在你的周圍環境中，你通常和那些人聯繫？

- i. 完全是亞洲人，亞裔美國人，東方人
- ii. 大部分是亞洲人，亞裔美國人，東方人
- iii. 一半亞洲人，一半歐裔人
- iv. 大部分歐裔人，黑人，拉丁人，或者其他非亞洲人
- v. 完全歐裔人，黑人，拉丁人，或者其他非亞洲人

9. 如果你有選擇，你更喜歡與那些人聯繫？

- i. 完全是亞洲人，亞裔美國人，東方人
- ii. 大部分是亞洲人，亞裔美國人，東方人
- iii. 一半亞洲人，一半歐裔人

1. The first part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are listed in a column, and the addresses are listed in a column to the right of the names. The names are: [Illegible names]

2. The second part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are listed in a column, and the addresses are listed in a column to the right of the names. The names are: [Illegible names]

- iv. 大部分歐裔人，黑人，拉丁人，或者其他非亞洲人
- v. 完全歐裔人，黑人，拉丁人，或者其他非亞洲人

10. 你喜歡那些音樂？

- i. 只有亞洲音樂（譬如，中國，日本，韓國，越南，等等）
- ii. 大部分是亞洲音樂
- iii. 亞洲與英文音樂各半
- iv. 大部分是英文音樂
- v. 只有英文音樂

11. 你喜歡那種電影？

- i. 只有亞洲語言電影
- ii. 大部分是亞洲語言電影
- iii. 亞洲語言與英文電影各半
- iv. 大部分是英文電影
- v. 只有英文電影

12. 你是第幾代居住美國的？

- i. 第一代 = 我出生於亞洲或其他地方
- ii. 第二代 = 我出生於美國，父親或母親出生於亞洲或其他地方
- iii. 第三代 = 我出生於美國，雙親也都出生於美國，祖父母都出生於亞洲或其他地方

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- iv. 第四代 = 我出生於美國，雙親也都出生於美國，祖父或祖母有一人出生於亞洲或其他地方，另一人出生於美國
- v. 第五代 = 我出生於美國，雙親及祖父母亦都出生於美國
- vi. 我不知道我是第幾代

13. 你在那裡長大？

- i. 只在亞洲
- ii. 大部分在亞洲，一些在美國
- iii. 亞洲與美國各半
- iv. 大部分在美國，一些在亞洲
- v. 只在美國

14. 你和亞洲有過怎樣的接觸？

- i. 至少有一年在亞洲成長
- ii. 在亞洲居住少於一年
- iii. 偶爾拜訪亞洲
- iv. 偶爾與在亞洲的人們聯絡 (信件，電話，等等)
- v. 沒有和在亞洲的人們有聯絡和接觸的經驗



15. 在家裡你喜歡什麼樣的食物？

- i. 完全是亞洲食物
- ii. 大部分是亞洲食物，一些美國食物
- iii. 亞洲食物與美國食物各半
- iv. 大部分是美國食物
- v. 完全是美國食物

16. 在餐廳裡你喜歡那種食物？

- i. 完全是亞洲食物
- ii. 大部分是亞洲食物，一些美國食物
- iii. 亞洲食物與美國食物各半
- iv. 大部分是美國食物
- v. 完全是美國食物

17. 你是否？

- i. 只讀亞洲語言
- ii. 讀亞洲語言比英文好
- iii. 讀亞洲語言和英文一樣好
- iv. 讀英文比亞洲語言好
- v. 只讀英文

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. W. D. Jones, and Mr. R. L. Brown.

2. The second part of the document is a list of the names and addresses of the members of the committee who were present at the meeting. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. W. D. Jones, and Mr. R. L. Brown.



18. 你是否？

- i. 只寫亞洲語言
- ii. 寫亞洲語言比英文好
- iii. 寫亞洲語言和英文一樣好
- iv. 寫英文比亞洲語言好
- v. 只寫英文

19. 如果你認為你是一個亞洲人(東方人，亞洲人，亞裔美國人，華裔美國人，等等，任何一種你喜歡的)，

你對自己的亞洲血統驕傲程度如何？

- i. 非常驕傲
- ii. 中度驕傲
- iii. 一些驕傲
- iv. 沒有驕傲但也沒有負面感覺
- v. 沒有驕傲但也有負面感覺

20. 你如何評斷你自己？

- i. 非常亞洲的
- ii. 大部分亞洲的
- iii. 雙重文化的

iv. 大部分西化的

v. 非常西化的

21. 你參加亞洲的慶典節日等等嗎？

i. 幾乎全部

ii. 大部分

iii. 一些

iv. 少部分

v. 從來沒有

22. 評斷你自己相信的亞洲價值觀（譬如，婚姻，家庭，教育，工作）：

1

2

3

4

5

(不相信)

(強烈相信亞洲價值觀)

23. 評斷你自己相信的美國(西方)價值觀的程度：

1

2

3

4

5

(不相信)

(強烈相信西方價值觀)

24. 評斷你自己在和同種族的人在一起時的適合程度：

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(不適合)

(非常適合)

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**Please mark the bubble that corresponds to your answer.**

- 1 = Strongly Agree
- 2 = Agree
- 3 = Disagree
- 4 = Strongly Disagree

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|---|-----------------------|-----------------------|-----------------------|-----------------------|
| 1. Planning family activities is difficult because we misunderstand each other. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2. We resolve most everyday problems around the house.                          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3. When someone is upset the others know why.                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 4. When you ask someone to do something, you have to check that they did it.    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. If someone is in trouble, the others become too involved.                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 6. In times of crisis we can turn to each other for support.                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 7. We don't know what do when an emergency comes up.                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 8. We sometimes run out of things that we need.                                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 9. We are reluctant to show our affection for each other.                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 10. We make sure members meet their family responsibilities                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 11. We cannot talk to each other about the sadness we feel.                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 12. We usually act on our decisions regarding problems.                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 13. You only get the interest of others when something is important to them.    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 14. You can't tell how a person is feeling from what they are saying.           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15. Family tasks don't get spread around enough.                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 16. Individuals are accepted for what they are.                                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 17. You can easily get away with breaking the rules.                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 18. People come right out and say things instead of hinting at them.            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

1 = Strongly Agree  
2 = Agree  
3 = Disagree  
4 = Strongly Disagree

- |   | 1                     | 2                     | 3                     | 4                     |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| 19. Some of us just don't respond emotionally.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 20. We know what to do in an emergency.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 21. We avoid discussing our fears and concerns.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 22. It is difficult to talk to each other about tender feelings.                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 23. We have trouble meeting our bills.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 24. After our family tries to solve a problem, we usually discuss whether it worked out or not. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 25. We are too self-centered.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 26. We can express feelings to each other.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 27. We have no clear expectations about toilet habits.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 28. We do not show our love for each other.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 29. We talk to people directly rather than go through go-betweens                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 30. Each of us has particular duties and responsibilities                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 31. There are lots of bad feelings in the family.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 32. We have rules about hitting people.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 33. We get involved with each other only when something interests us.                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 34. There's little time to explore personal interests.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 35. We often don't say what we mean.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 36. We feel accepted for what we are.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 37. We show interest in each other when we can get something out of it personally.              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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| 38. We resolve most emotional upsets that come up.                                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 39. Tenderness takes second place to other things in our family.                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 40. We discuss who is to do household jobs.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 41. Making decisions is a problem for our family.                                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 42. Our family shows interest in each other only when they can get something out of it. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 43. We are frank with each other.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 44. We don't hold to any rules or standards.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 45. If people are asked to do something, they need reminding.                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 46. We are able to make decisions about how to solve problems.                          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 47. If the rules are broken, we don't know what to expect.                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 48. Anything goes in our family.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 49. We express tenderness.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 50. We confront problems involving feelings.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 51. We don't get along well together.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 52. We don't talk to each other when we are angry.                                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 53. We are generally dissatisfied with the family duties assigned to us.                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 54. Even though we mean well, we intrude too much into each other's lives.              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 55. There are rules about dangerous situations.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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- 1 = Strongly Agree
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56. We confide in each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
57. We cry openly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
58. We don't have reasonable transport.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
59. When we don't like what someone has done, we tell them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
60. We try to think of different ways to solve problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. J. B. Jones, and Mr. W. C. Brown.

2. The second part of the document is a list of the names and addresses of the members of the committee who were present at the meeting. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. J. B. Jones, and Mr. W. C. Brown.

職員專用 ID#
填寫人：母親/父親/監護人

以下都是敘述有關於家庭的句子，請你謹慎的閱讀並迅速及真實地圈出最能描繪您家庭實際情況的號碼：

在我的家中：

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1. 計劃家庭活動是異常困難，因為各人常彼此誤解.....1 2 3 4
2. 我們能解決家中大部份的日常問題..... 1 2 3 4
3. 當家中某人感到不開心時，其他家人都會知道箇原因..... 1 2 3 4
4. 當你要求家中某人做些事時，你必要去查看他是否有做..... 1 2 3 4
5. 當一個家人遇到麻煩，其他家人便會過份牽涉其中..... 1 2 3 4
6. 當有危機時，我們可以互相扶持..... 1 2 3 4
7. 當緊急事故發生時，我們往往不知應如何應付..... 1 2 3 4
8. 家中有時候會缺乏所需的物品..... 1 2 3 4
9. 我們家中各人都不願互相表達感情..... 1 2 3 4
10. 我們確保家中各人都會承擔對家庭的責任..... 1 2 3 4
11. 我們不能互相傾訴所感到的憂傷..... 1 2 3 4
12. 當我們遇到問題時，常會將有關之決定付諸實行..... 1 2 3 4
13. 唯有當事情是對家人重要時，你才可引起他們的興趣..... 1 2 3 4

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| 14. 你不能從家人的說話而知道他的感受.....                  | 1 | 2 | 3 | 4 |
| 15. 家務未能平均地分配.....                         | 1 | 2 | 3 | 4 |
| 16. 無論家人是怎樣的人,大家都會接納他/她.....               | 1 | 2 | 3 | 4 |
| 17. 當你不守規矩時也很容易逃避懲罰.....                   | 1 | 2 | 3 | 4 |
| 18. 我們有話便直說,不需要暗示.....                     | 1 | 2 | 3 | 4 |
| 19. 我們有些人從不以情感作回應.....                     | 1 | 2 | 3 | 4 |
| 20. 我們知道如何應付緊急事件.....                      | 1 | 2 | 3 | 4 |
| 21. 我們避免談論各人所恐懼和擔心的事.....                  | 1 | 2 | 3 | 4 |
| 22. 彼此談及溫柔親切的感覺是困難的.....                   | 1 | 2 | 3 | 4 |
| 23. 我們未能應付賬單支出.....                        | 1 | 2 | 3 | 4 |
| 24. 每當我們共同嘗試解決問題之後,我們通常會<br>討論這方法是否有效..... | 1 | 2 | 3 | 4 |
| 25. 我們太自我中心.....                           | 1 | 2 | 3 | 4 |
| 26. 我們可以彼此表達感受.....                        | 1 | 2 | 3 | 4 |
| 27. 我們對於使用洗手間的習慣,沒有明確的協議.....              | 1 | 2 | 3 | 4 |
| 28. 我們從不互相表達關懷與愛.....                      | 1 | 2 | 3 | 4 |
| 29. 我們會直接溝通,不需要任何“中間人”.....                | 1 | 2 | 3 | 4 |





在我的家中：

	極	不	不	極
	同	同	同	同
	意	意	意	意
30. 各人都有特別的責任與任務.....	1	2	3	4
31. 我們對家人會有許多不愉快的感受.....	1	2	3	4
32. 我們對於打人是規矩的.....	1	2	3	4
33. 只有當大家對那些事都感興趣時,我們才可彼此維繫.....	1	2	3	4
34. 只有很少時間去探索個人的興趣.....	1	2	3	4
35. 我們常常不會說真心話.....	1	2	3	4
36. 我們感覺到無論自己是怎樣也會被家人接納的.....	1	2	3	4
37. 當我們可以從中取得個人利益時,我們就會互相感興趣.....	1	2	3	4
38. 我們可以解決大部份情緒上的波動.....	1	2	3	4
39. 我們認為彼此溫和相對是次要的.....	1	2	3	4
40. 我們會商討誰去做家務.....	1	2	3	4
41. 對我們一家人來說,做決定是很困難的事.....	1	2	3	4
42. 我的家人只會在可以得到利益時,才會互相感興趣.....	1	2	3	4
43. 我們可以坦誠相對.....	1	2	3	4
44. 我們並不持守任何規則或標準.....	1	2	3	4
45. 當你要求家人做點事時,你需提醒他們.....	1	2	3	4

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在我的家中：

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極 不不  
同同同同  
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46. 我們有能力決定怎樣解決問題.....1 2 3 4
47. 如果家中的規矩不被遵守, 我們便不知可期望什麼了.....1 2 3 4
48. 在家中什麼事都會被許可的.....1 2 3 4
49. 我們會表達溫柔親切的一面.....1 2 3 4
50. 我們會一起面對涉及個人感受的問題.....1 2 3 4
51. 我們的相處並不融洽.....1 2 3 4
52. 當我們感到憤怒時, 便不會互相交談.....1 2 3 4
53. 我們不滿意家務與責任的分配.....1 2 3 4
54. 雖然我們是出於好意, 但卻過份侵擾了其他家人的生活.....1 2 3 4
55. 對於危險的情況, 我們都有守則.....1 2 3 4
56. 我們彼此信任.....1 2 3 4
57. 我們會無隱藏地哭泣.....1 2 3 4
58. 我們沒有合適的交通工具.....1 2 3 4
59. 如果我們不喜歡家人之所為, 便會告訴他.....1 2 3 4
60. 我們會嘗試想出不同的方法來解決問題.....1 2 3 4



### Attitudes toward child rearing scale (ATCRS)

Direction: (1) Read each of the statements below and then rate them as follows:

1. Strongly agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

(2) Indicate your opinion by drawing a circle around "1" if you strongly agree, around "2" if you agree, around "3" if you are not sure, around "4" if you disagree and around "5" if you strongly disagree.

(3) There are no right or wrong answers. Therefore, answer according to your own opinion. It is very important to the study that all questions be answered. Many of the statements will seem alike but all are necessary to show slight differences of opinion.

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**\* Read each of the statements below and then rate them as follows:**

<b>1.</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Strongly agree</b>	<b>Agree</b>	<b>Undecided</b>	<b>Disagree</b>	<b>Strongly disagree</b>

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. Withholding allowance is a good method of discipline.   | 1 | 2 | 3 | 4 | 5 |
| 2. Children should be invited to participate in parent-teacher conferences.                      | 1 | 2 | 3 | 4 | 5 |
| 3. Parents should remind children to say "Please" and "Thank you" when they forget.              | 1 | 2 | 3 | 4 | 5 |
| 4. Parents should regularly help their children with the homework.                               | 1 | 2 | 3 | 4 | 5 |
| 5. It is helpful to frequently remind children of the rules at home.                             | 1 | 2 | 3 | 4 | 5 |
| 6. Children should obey the wishes of their elders.  | 1 | 2 | 3 | 4 | 5 |
| 7. Children should be able to treat their playthings as they wishes, without fear of punishment. | 1 | 2 | 3 | 4 | 5 |
| 8. In most quarrels between young children, adults should arbitrate.                             | 1 | 2 | 3 | 4 | 5 |
| 9. Children should be able to choose how much of each food they want at a meal.                  | 1 | 2 | 3 | 4 | 5 |
| 10. Children should not be allowed to wear clothes that are noticeable dirty.                    | 1 | 2 | 3 | 4 | 5 |
| 11. Children should be participate in a decision about their bedtime.                            | 1 | 2 | 3 | 4 | 5 |

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**\* Read each of the statements below and then rate them as follows:**

<b>1.</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
<b>Strongly agree</b>	<b>Agree</b>	<b>Undecided</b>	<b>Disagree</b>	<b>Strongly disagree</b>	
12. Physical punishment is often the only method of discipline that will work.	1	2	3	4	5
13. Parents should demand respect from their children.	1	2	3	4	5
14. Parents should make it their responsibility to see how their children are behaving in school.	1	2	3	4	5
15. Parents should step in if the teacher seems to not understand the behavior of their children.	1	2	3	4	5
16. Parents should not interfere if an older child seems to be picking on a younger child.	1	2	3	4	5
17. Children of six can be helpful in deciding whether the family should buy a new car.	1	2	3	4	5
18. Children should not be allowed to go outside on a cold day without wearing warm clothing.	1	2	3	4	5
19. If parents really do a good job rearing their children, the children will turn out fine.	1	2	3	4	5
20. Parents should assume that their children will do whatever they have agreed to do.	1	2	3	4	5
21. Parents should try to convince fearful children that there is nothing of which to be afraid.	1	2	3	4	5
22. Parents who remind their children several times to do a task are training their children in disobedience.	1	2	3	4	5
23. Parents should remind their children when it is time to go to bed.	1	2	3	4	5
24. All members of family regardless of age should agree on most family decisions.	1	2	3	4	5
25. Parents should praise their children when the children have been good.	1	2	3	4	5
26. Children should be able to spend their allowance as they choose.	1	2	3	4	5
27. Parents should make sure their children look right in their dress.	1	2	3	4	5
28. Children should be paid for doing extra chores around the house.	1	2	3	4	5
29. It is best for parents not to become involved when children are misbehaving.	1	2	3	4	5





**\* Read each of the statements below and then rate them as follows:**

**1. Strongly agree      2. Agree      3. Undecided      4. Disagree      5. Strongly disagree**

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 30. Parents should stop a fight between two children if it looks as if one of them will get hurt.            | 1 | 2 | 3 | 4 | 5 |
| 31. Children need punishment in order to learn proper behavior.  | 1 | 2 | 3 | 4 | 5 |
| 32. Children should be responsible for putting away their own toys as soon as they learn to walk.            | 1 | 2 | 3 | 4 | 5 |
| 33. Children need to be reminded regularly as to what's right and wrong.                                     | 1 | 2 | 3 | 4 | 5 |
| 34. Parents should step in if an adult neighbor seems to be unfairly reprimanding their children.            | 1 | 2 | 3 | 4 | 5 |
| 35. To correct children for something that they already know is wrong is not helpful to the children.        | 1 | 2 | 3 | 4 | 5 |
| 36. Parents are morally responsible for how their children behave.   | 1 | 2 | 3 | 4 | 5 |
| 37. Parents should step in if a bully is picking on their children.  | 1 | 2 | 3 | 4 | 5 |
| 38. If children receive lots of love and affection, they will turn out fine.                                 | 1 | 2 | 3 | 4 | 5 |
| 39. Parents are disrespectful of their children when they do something their children can do for themselves. | 1 | 2 | 3 | 4 | 5 |
| 40. Parents should point out their children's mistakes.  | 1 | 2 | 3 | 4 | 5 |

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## 子女管教問題意見調查表 (ATCRS)

**說明：** (A) 本問卷的目的在瞭解父母對子女管教問題的態度。在每一道題之後附有

(1)“極贊成”、(2)“贊成”、(3)“沒意見”、(4)“不贊成”、(5)“極不贊成”五種選擇。

(B) 做答之前，請先將題目閱讀一遍，隨即圈選一個最能表達您個人意見的答案。例如：

一道題，限制零用錢是一種有效的懲罰方式。假若您的看法是極贊成，就請您圈選 **①**。

(C) 本問卷的每一道題，並沒有對與錯的正確答案。且本問卷系作學術研究之用，答案絕

對保密，請您真實誠懇的做答。謝謝您的合作！

\*\*\*\*\*

	極				極
	贊	沒	不	不	
	成	贊	意	贊	贊
	成	成	見	成	成
1. 限制零用錢是一種有效的懲罰方式。.....	1	2	3	4	5
2. 小孩應當與父母一同被邀請參加家長會。.....	1	2	3	4	5
3. 當小孩忘了說請或謝謝時，父母應該提醒他(她)。.....	1	2	3	4	5
4. 父母應當時常輔導小孩做功課。.....	1	2	3	4	5
5. 常常提醒小孩要遵守家規是有益的。.....	1	2	3	4	5



	極	沒	不	不	極
	贊	贊	意	贊	贊
	成	成	見	成	成
6. 弟妹應當聽從哥哥或姊姊的話。.....	1	2	3	4	5
7. 小孩可以盡情地玩自己的玩具，既使弄壞了也不用擔心父母的懲罰。.....	1	2	3	4	5
8. 對於小孩之間的爭吵，大人應該主動調解一切。.....	1	2	3	4	5
9. 吃飯時，小孩可以自己決定要吃的菜量和飯量。.....	1	2	3	4	5
10. 父母不應當讓小孩穿上一件已經髒了的衣服。.....	1	2	3	4	5
11. 小孩應當參與討論，決定自己睡覺的時間。.....	1	2	3	4	5
12. 體罰經常是唯一有效的管教方式。.....	1	2	3	4	5
13. 父母應當要求子女尊重他們。.....	1	2	3	4	5
14. 父母有責任了解子女在校的一切表現。.....	1	2	3	4	5
15. 當孩子的行為不被老師理解時，父母應該到學校與老師溝通。.....	1	2	3	4	5
16. 當大孩子想要欺負弟妹時，父母不應當干涉。.....	1	2	3	4	5

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. J. B. Jones, and Mr. W. C. Brown.

2. The second part of the document is a list of the names and addresses of the members of the committee who were present at the meeting. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. J. B. Jones, and Mr. W. C. Brown.

	極	沒	不	不	極
	贊	贊	意	贊	贊
	成	成	見	成	成
17. 對於家裡是否要買新車，一個六歲大的小孩也可以提出有效 意見。.....	1	2	3	4	5
18. 在天冷的時候，小孩穿的不夠暖是不准外出的。.....	1	2	3	4	5
19. 假若父母盡心盡力的管教小孩，長大之後他們會在各方面 都有良好的表現。.....	1	2	3	4	5
20. 父母應當相信孩子會完成他(她)們已承諾的事。.....	1	2	3	4	5
21. 當孩子對某事物心存懼怕時，父母應當解釋並設法安撫 他(她)的恐懼感。.....	1	2	3	4	5
22. 當父母多次催促孩子做某一件事時（例：做功課、洗澡）， 會導致小孩產生反抗心理。.....	1	2	3	4	5
23. 父母應當提醒小孩：上床睡覺的時間到了。.....	1	2	3	4	5
24. 對於家裏大部分決定，無論年紀大小，所有成員都應遵守。...	1	2	3	4	5
25. 當小孩表現良好時，父母應當給予讚美。.....	1	2	3	4	5

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	極	沒	不	不	極
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	成	成	見	成	成
26. 小孩可以自由支配自己的零用錢。 .....	1	2	3	4	5
27. 父母必須讓小孩的穿著看起來整齊清潔。 .....	1	2	3	4	5
28. 當小孩幫父母做額外的家務時，應當獲得報酬。 ...	1	2	3	4	5
29. 當孩子有不良行為時 (例：生氣、哭鬧等)，做父母的最好不要去理會他(她)。 .....	1	2	3	4	5
30. 當兩個孩子在打架，其中一方既將受到傷害時，做父母的應當及時阻止。 .....	1	2	3	4	5
31. 為了使小孩學到良好行為，適當處罰是必要的。 .....	1	2	3	4	5
32. 當小孩一學會走路時，就應當自己收拾玩具。 .....	1	2	3	4	5
33. 父母應當經常告訴孩子什麼是對的，什麼是錯的。 .....	1	2	3	4	5
34. 當看到孩子被鄰居大人不公平指責時，父母應當及時介入。 ...	1	2	3	4	5

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	成	成	見	成	成
35. 當孩子已經知道自己的錯誤時，大人的再次責備是無意義的。	1	2	3	4	5
36. 對於小孩的行為表現，父母應負起道德責任。.....	1	2	3	4	5
37. 當子女被壞孩子欺侮時，做父母的應及時介入加以阻止。....	1	2	3	4	5
38. 父母儘可能的給予孩子關愛，長大之後這些孩子會在各方面都 會有良好的表現。.....	1	2	3	4	5
39. 父母替孩子做他(她)自己能做的事，這樣的做法是父母對小孩 不尊重的表現。.....	1	2	3	4	5
40. 對於孩子的錯誤，父母應當指出。.....	1	2	3	4	5

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. J. D. Jones, and Mr. W. E. Brown.

2. The second part of the document is a list of the names and addresses of the members of the committee who were present at the meeting. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes names such as Mr. J. H. Smith, Mr. J. D. Jones, and Mr. W. E. Brown.

**INSTRUCTIONS:** Think about **TODAY**, then for each activity listed below check the correct box for the activity you did Before School, During School, and After School.

In the **time column**, please write down how many minutes you spent in the activity that was more than 5 minutes.

In the **intensity column**, please write down whether this activity caused you to “breath hard or feel tired none (N), some (S), or most (M) of the time”.

Activity	Before school		During school		After school	
	Time	Intensity	Time	Intensity	Time	Intensity
<b>1. Bicycling</b>						
<b>2. Swimming Laps</b>						
<b>3. Gymnastics: bars, beam, tumbling, trampoline</b>						
<b>4. Exercise: push-ups, sit-ups, jumping jacks</b>						
<b>5. Basketball</b>						
<b>6. Baseball/Softball</b>						
<b>7. Football</b>						
<b>8. Soccer</b>						
<b>9. Volleyball</b>						
<b>10. Racket Sports: badminton, tennis</b>						
<b>11. Ball Playing: Four Square, dodge ball, Kickball</b>						
<b>12. Games: chase, tag, hopscotch</b>						
<b>13. Outdoor Play: climbing trees, hide and seek</b>						
<b>14. Water Play: (swimming pool, ocean or lake)</b>						



Activity	Before school		During school		After school	
	Time	Intensity	Time	Intensity	Time	Intensity
<b>15. Jump Rope</b>						
<b>16. Dance</b>						
<b>17. Outdoor Chores:</b> mowing raking, gardening						
<b>18. Indoor Chores:</b> mopping, vacuuming, weeping						
<b>19. Mixed Walking/ Running</b>						
<b>20. Walking</b>						
<b>21. Running</b>						
<b>22. Other</b> (physical activity class, lessons or teams)						
<b>23. Other</b> _____						
<b>24. Other</b> _____						
<b>25. Other</b> _____						

Activity	Before school		After school	
	Time	Time	Time	Time
<b>26. TV/Video</b>	_____ Hour _____ Min	_____ Hour _____ Min	_____ Hour _____ Min	_____ Hour _____ Min
<b>27. Video games &amp; Computer games</b>	_____ Hour _____ Min	_____ Hour _____ Min	_____ Hour _____ Min	_____ Hour _____ Min
<b>28. Self-study</b>	_____ Hour _____ Min	_____ Hour _____ Min	_____ Hour _____ Min	_____ Hour _____ Min
<b>29. Attending remedial school</b>	_____ Hour _____ Min	_____ Hour _____ Min	_____ Hour _____ Min	_____ Hour _____ Min

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今日日期: \_\_\_\_\_ 星期 \_\_\_\_\_

姓名: \_\_\_\_\_ 班級: \_\_\_\_\_ 座號: \_\_\_\_\_

請回想昨天，在以下所列出的活動勾選出你昨天在上學之前、上學時、及放學後做過的活動。

請在以下所列出的活動分鐘欄內，寫下你花了幾分鐘做這個活動。

請在程度欄內，寫下做這個活動讓你呼吸變快或感到累的程度(沒有，一些，非常)

\*\*\*\*\*

昨天的活動

上學前

上學時

放學後

	上學前		上學時		放學後			
	分鐘	程度	分鐘	程度	分鐘	程度		
1. 騎腳踏車								
2. 游泳								
3. 做健身操， 例如：吊單槓、用 平衡杆、或翻跟斗								
4. 做運動，例如： 做伏底挺身、仰臥 起作、或跳繩運動								
5. 打籃球								
6. 打棒球								
7. 踢美式足球								
8. 踢足球								
9. 打排球								
10. 拍球類的運動， 例如：羽毛球或網 球								
11. 打球類的運動， 例如：躲避球或踢 球								
12. 玩遊戲，例 如：追逐或捉人遊 戲								



## 昨天的活動

## 上學前

## 上學時

## 放學後

	上學前			上學時			放學後		
	分鐘	程度		分鐘	程度		分鐘	程度	
13. 戶外遊戲：爬樹或躲迷藏									
14. 水上遊戲：在游泳池或海邊									
15. 跳繩									
16. 跳舞									
17. 戶外清潔：割草或園藝									
18. 室內清潔：拖地、吸地板或擦桌椅									
19. 走路與跑步混合的活動									
20. 走路									
21. 跑步或快走									
22. 其他的體育活動或體育課 _____									
23. 其他 _____									
24. 其他 _____									
25. 其他 _____									

## 上學前

## 放學後

26. 看電視或錄影帶 \_\_\_\_\_小時\_\_\_\_分
27. 玩卡帶或電腦遊戲 \_\_\_\_\_小時\_\_\_\_分
28. 讀書或自修 \_\_\_\_\_小時\_\_\_\_分
29. 上補習班(課) \_\_\_\_\_小時\_\_\_\_分

- \_\_\_\_\_小時\_\_\_\_分
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1. The first part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are listed in a column, and the addresses are listed in a column to the right of the names. The names are: [Illegible names]

2. The second part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are listed in a column, and the addresses are listed in a column to the right of the names. The names are: [Illegible names]

### Modified Food Frequency Questionnaire (English)

Instruction: Listed below are some food items which some people eat or drink. Please circle which you ate each food TODAY. There is no right or wrong answer.

1. Grain category

	Question: How often did you eat these foods today?		
1	Fried rice	YES	NO
2	Fried noodle	YES	NO
3	Fried T-bone with rice	YES	NO
4	Oiled and fried rice	YES	NO
5	Rice with lard or meat juice	YES	NO
6	Instant noodle	YES	NO
7	Cool noodle	YES	NO
8	Sticky rice in bamboo leaves	YES	NO
9	Rice/noodle with ground meat	YES	NO

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2. Meat, fish, Bean, egg, milk category

	Question: How often did you eat these foods today?		
1	Ground pork/beef	YES	NO
2	Fried chicken	YES	NO
3	Whole milk (or powder)	YES	NO
4	Low-fat milk (or powder)	YES	NO
5	Skim milk (or powder)	YES	NO
6	Fish ball	YES	NO
7	Meat ball	YES	NO
8	Bacon	YES	NO
9	Sausage	YES	NO
10	Wiener (hot dog or corn dog)	YES	NO
11	Ham	YES	NO
12	Pan-fried fish	YES	NO
13	Meat fried, pan fried, or Chinese fried	YES	NO
14	Fried oyster	YES	NO
15	Fried octopus	YES	NO
16	Fried vegetable ball	YES	NO
17	Canned fish	YES	NO
18	Canned meat	YES	NO
19	Oiled to-fu	YES	NO

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### 3. Combination and other productions

	Question: How often did you eat these foods today?		
1	French fries, fried potatoes, fried onion	YES	NO
2	Candy (like Gummy bears, starburst, skittes)	YES	NO
3	Cookie	YES	NO
4	Chocolate bars, hugs, m & m, chocolate candy	YES	NO
5	Ice cream or frozen yogurt	YES	NO
6	Ice bar	YES	NO
7	Cake, pie or turnovers	YES	NO
8	Hamburger	YES	NO
9	Pudding	YES	NO
10	Pizza, pizza package	YES	NO
11	Chewing gum	YES	NO
12	Sesame	YES	NO
13	Dried melon seed	YES	NO
14	Dried fruit	YES	NO
15	Potato chips	YES	NO
16	Fried chips (such as popcorn, corn chips)	YES	NO
17	Milk tea	YES	NO
18	Ice tea	YES	NO
19	Soda other than coke (such as orange soda, Gatorade, Kool-aid)	YES	NO
20	Coke	YES	NO
21	Chicken or beef or pork broth soup	YES	NO
22	Corn broth soup	YES	NO



## Food Frequency Questionnaire (FFQ)

### 食物頻率問卷

說明：以下有一些食物選項，請依照你(妳)星期三及星期六的飲食狀況寫下你(妳)是否吃或喝這些食物。這些題目並沒有對或錯的分別，請你(妳)依照真實的情況回答。

問題：請你(妳)回想一下在星期三(星期六)，你(妳)是否吃或喝下列這些食物？

#### 1. 五穀類

	是 或 否
1. 炒飯	是 否
2. 炒麵	是 否
3. 排骨飯	是 否
4. 油飯	是 否
5. 豬油或肉汁拌飯	是 否
6. 泡麵(包括熱水泡的或乾吃)	是 否
7. 涼麵	是 否
8. 肉粽	是 否
9. 肉燥麵或肉燥麵	是 否



## II. 肉、魚、豆、蛋、奶類

1. 碎肉 (包括豬肉或牛肉可能是炒的或煎的但不包括漢堡)	是	否
2. 炸雞 (包括：香雞排，炸雞塊，炸雞排，或鹽酥雞)	是	否
3. 全脂牛奶 (或奶粉)	是	否
4. 低脂牛奶 (或奶粉)	是	否
5. 脫脂牛奶 (或奶粉)	是	否
6. 魚丸虱目魚丸或貢丸	是	否
7. 肉丸 (包括一般肉丸或獅子頭)	是	否
8. 臘肉	是	否
9. 香腸	是	否
10. 熱狗	是	否
11. 火腿	是	否
12. 煎魚	是	否
13. 煎、炒、炸的肉 (包括與其他青菜一起炒的肉片或肉絲)	是	否
14. 蚵仔煎	是	否
15. 炸花枝	是	否
16. 炸菜丸	是	否
17. 魚罐頭 (包括：鮪魚罐頭，海底雞等)	是	否
18. 肉罐頭 (包括：豬肉罐頭、瓜子肉、度小月肉罐、或牛肉罐頭)	是	否
19. 油豆腐	是	否



### III. 其他

1. 炸薯條	是	否
2. 糖果	是	否
3. 餅乾	是	否
4. 巧克力糖	是	否
5. 冰淇淋 (包括甜筒)	是	否
6. 冰棒	是	否
7. 蛋糕	是	否
8. 漢堡	是	否
9. 布丁	是	否
10. 披薩	是	否
11. 口香糖	是	否
12. 芝麻 (包括: 白芝麻, 黑芝麻, 芝麻醬, 芝麻粉)	是	否
13. 瓜子	是	否
14. 脫水水果乾或鹹酸甜等蜜餞	是	否
15. 洋芋片 (像是: 波卡、卡迪那、波特多、洋芋片)	是	否
16. 點心零嘴 (像是: 乖乖, 蝦味先, 可樂果, 爆米花, 芝多司, 翠果子, 芝士球, 金牛角)	是	否
17. 奶茶	是	否
18. 含糖紅茶或含糖綠茶 (像是: 泡沫紅茶, 泡沫綠茶)	是	否
19. 汽水	是	否
20. 可樂	是	否
21. 雞肉濃湯 排骨濃湯 或 牛肉濃湯	是	否
22. 玉米濃湯	是	否

DATE \_\_\_\_\_

RA \_\_\_\_\_

ID \_\_\_\_\_

When some children feel stressed, nervous or worried about something, they do some of the things listed below. Think about when YOU feel stressed, nervous or worried. **Circle HOW OFTEN** you do each of these things either before the stressful thing happens, while you feel stressed after the stressful thing is over. Then tell me **HOW MUCH** each thing helps you feel better when you feel stressed, nervous or worried.

\_\_\_\_\_

**Stressful Thing**

**Example: How often do you?**

**How much does it help?**

	How Often?				How Much Does it Help?			
	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
Play with other children								

	How Often?				How Much Does it Help?			
	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
1. Be by myself; be alone								
2. Bite my nails or crack my knuckles								
3. Cuddle my pet or stuffed animal								
4. Cry or feel sad								
5. Daydream								
6. Do something about it								
7. Do work around the house								
8. Draw, write or read something								



DATE \_\_\_\_\_

RA \_\_\_\_\_

ID \_\_\_\_\_

	How often?				How much does it help?			
	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
9. Eat or drink	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
10. Fight with someone	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
11. Get mad	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
12. Hit, throw or break things	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
13. Pick on someone	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
14. Play a game or something	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
15. Pray	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
16. Run or walk away	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
17. Say I'm sorry of tell the truth	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
18. Sleep, take a nap.	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
19. Talk to myself	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
20. Talk to someone.	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
21. Think about it.	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
22. Try to forget about it.	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot

DATE \_\_\_\_\_

RA \_\_\_\_\_

ID \_\_\_\_\_

	How often?				How much does it help?			
	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
23. Try to relax, stay calm.	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
24. Walk, run or ride my bike.	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
25. Watch TV or listen to music	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
26. Yell or scream	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
27. Other	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot
28. Other	Never	Once in a while	A lot	Most of the Time	Never do it	Does not Help	Helps a little	Helps a lot

姓名: \_\_\_\_\_ 班級: \_\_\_\_\_ 座號: \_\_\_\_\_

有些小朋友當他們感到有壓力、緊張、或擔心一些事情時，他們會做以下所列出的事。請在下列問題勾選當你感到有壓力、緊張、或擔心時，你有多常使用以下所列出的事。不管是在使你感到壓力的事情發生前、發生時、或發生後，然後請勾選以下所列出的事對減輕你的壓力、緊張、或擔心的幫助有多大。

**練習題** 當你感到有壓力時，你有多常 它幫助你有多大？

	沒做過	偶而	經常	總是	沒做過	沒幫助	有一點幫助	幫助很大
跟其他小朋友玩								

\*\*\*\*\*

題目開始:

你感到壓力最大的事是什麼? \_\_\_\_\_

當你感到有壓力時，你有多常 它幫助你有多大？

	沒做過	偶而	經常	總是	沒做過	沒幫助	有一點幫助	幫助很大
1. 獨自一人								
2. 咬指甲或弄指關節出聲								
3. 抱寵物或玩偶								
4. 哭或感到難過								
5. 做白日夢								
6. 做一些事來解決問題								
7. 做家務事								
8. 畫畫、寫字、或讀書								

當你感到有壓力時，你有多常

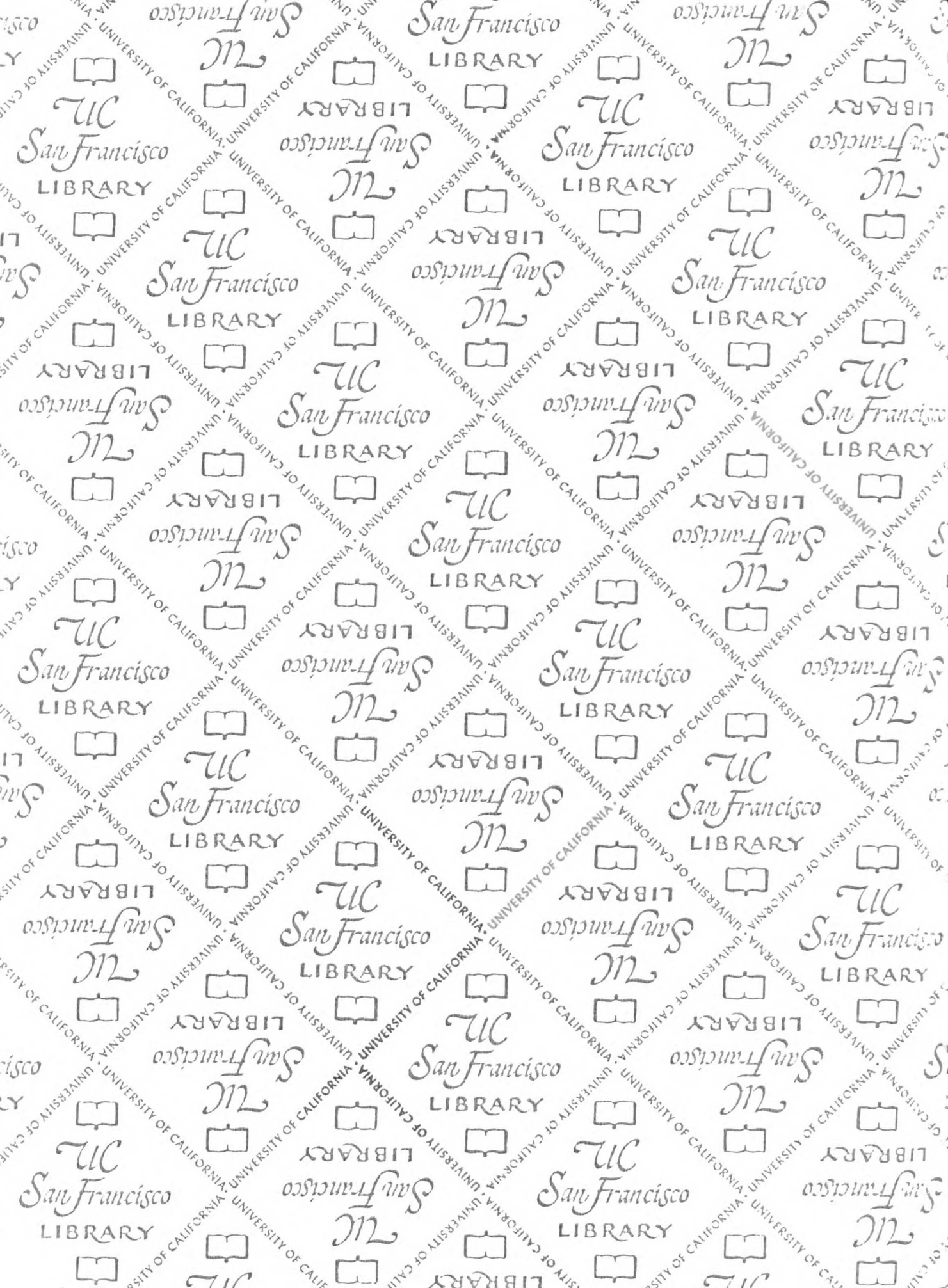
它幫助你有多大？

	沒做過	偶而	經常	總是	沒做過	沒幫助	有一點幫助	幫助很大
9. 吃或喝東西								
10. 和別人打架								
11. 生氣								
12. 打、丟、或破壞東西								
13. 挑與其他小朋友								
14. 玩玩具或遊戲								
15. 拜拜或禱告								
16. 走開或跑開								
17. 對說實話感到難過								
18. 睡覺或睡午覺								
19. 跟自己說話								
20. 告訴別人								
21. 想一想這件事								
22. 試著忘記它								
23. 試著放鬆或冷靜								
24. 走路、跑步、或騎腳踏車								
25. 看電視或聽音樂								
26. 大哄或大叫								
其它 _____								
其它 _____								

### Appendix 3

#### *MET values for physical activities on SAPAC*

Activity	METs
1. Bicycling	4.0
2. Swimming laps	8.0
3. Gymnastics	4.0
4. Exercise: push-up	8.0
5. Basketball	6.0
6. Baseball/softball	5.0
7. Football	8.0
8. Soccer	7.0
9. Volleyball	3.0
10. Racket sports	5.7
11. Ball play	5.0
12. Games	5.0
13. Outdoor play	6.0
14. Water play	6.0
15. Jump rope	10.0
16. Dance	4.5
17. Outdoor chores	4.8
18. Indoor chores	3.5
19. Mixed walking/running	6.0
20. Walking	3.5
21. Running	8.0



# For reference

Not to be taken  
from the room.

