Self-competence and quality of life in Chinese-American children

Jyu-Lin Chen[1], and Mary Ellen Wilkosz[2]

[1]*Department of Family Health Care Nursing, University of California, San Francisco*

[2]*Department of Nursing, Sonoma State University, Rohnert Park, CA*

Abstract

The goal of this study was to examine factors associated with self-competence and quality of life in Chinese-American children. A cross-sectional design was used to examine factors associated with Chinese-American children's self-competence (perception of their own competence) and quality of life. Body mass index was used to measure children's relative weight. Children completed the Self-Perception Profile for Children, the Pediatric Quality of Life self-report, and the Children's Self-Administered Physical Activity Checklist. Parents provided demographic information and reported their level of acculturation. Sixty-five 8- and 10-year-old Chinese-American children (49% boys, 51% girls) and their parents participated in the study. Boys reported higher levels of competence in athletics than girls reported. Multivariate regression models reveal that an increased level of sedentary activity in Chinese American children contributes to low competence levels with respect to physical appearance and decreased quality of life in the social health domain. Increased BMI is related to decreased self-competence in physical appearance. Low levels of sedentary activity have a great influence on self-competence and quality of life in Chinese American children. The development of culturally appropriate programs that decrease sedentary activity and improve quality of life is critical for health promotion among Chinese Americans.

Keywords: self-competence, quality of life, weight status, physical activity, Chinese-American children

Introduction

Children's self-competence (perception of their own competence) is related to their health and health behaviors (Lohaus, Klein-Hessling, Ball, & Wild, 2004; Matheson, Killen, Wang, Varady, & Robinson, 2004; Yarcheski, 2004). Perceived self-competence is a person's own beliefs concerning their abilities and performance (Harter, 1984). A meta-analysis that included 37 studies published since 1983 suggests that a high level of self-competence is one of the critical predictors of positive health and health practices in children (Yarcheski, 2004). Results suggest that 8 predictors (low level of loneliness, high level of social support, positive perceived health status, high level of self-competence, positive future time perspective, positive self-esteem, greater hope, and low level of depression) had

moderate effect sizes on children's health. Other studies also suggest associations between self-competence in children and weight status and level of physical activity (Hesketh, Wake, & Waters, 2004; Stradmeijer, Bosch, Koops, & Seidell, 2000; Young-Hyman, 2003).

Differences in self-competence between overweight children and children of normal weight have also been documented (Hesketh, et al., 2004; Stradmeijer, et al., 2000; Young-Hyman, 2003). Overweight children reported significantly lower levels of social acceptance and physical competence than normal-weight children reported (McCullough, Muldoon, & Dempster, 2009). In an Australian study of 2,813 children of elementary school age, obese children reported significantly lower levels of perceived competence in the athletic domain,

physical appearance domain, and global self-worth than their normal-weight peers reported (Franklin, Denyer, Steinbeck, Caterson, & Hill, 2006). Results of studies of Chinese children in Taiwan and African American children also suggest that being overweight is associated with low levels of self-competence with respect to social acceptance and physical appearance (Chen, 2007; Sung, 2005; Young-Hyman, 2003). However, little is known about how overweight status affects self-competence in Chinese American children.

Physical activity is an integral component of children's healthy behaviors and an important element in the prevention of obesity. Regularly engaging in adequate levels of physical activity decreases the prevalence of obesity and lowers the risk of cardiovascular disease–related death, diabetes, and high cholesterol levels (Goran, Ball, & Cruz, 2003; Schmitz et al., 2002). Asian American children report lower levels of physical activity than do White and African American children (O'Loughlin, 1998; Wolf, 1993). However, factors associated with low levels of physical activity in Asian American children were not explored in these studies.

Regular physical activity decreases children's risk of being overweight and the associated health issues (Deforche et al., 2005; Hill, 2004; Rooney, Gritt, Havens, Mathiason, & Clough, 2005; Yin, Davis, Moore, & Treiber, 2005). Physical activity also improves psychosocial health, reducing symptoms of anxiety and depression and improving self-confidence and well-being (Eyler, 2003; Sonstroem, 1984). Correlations between physical activity and self-competence have been reported in children (Sollerhed, 2008; Strauss, 2001) although others have found no such association (Sallis, Prochaska, & Taylor, 2000). These studies are difficult to compare because they involved different age groups and used different measures of physical activity and self-competency.

Differences in the relationships between physical activity, weight status, and self-competence have been documented between African American and White girls. Brown et al.

(Brown et al., 1998) reported that decreases in children's competence in the physical appearance and social acceptance domains were associated with increasing body mass index (BMI), but the associations were smaller in African Americans than in Whites. They found that racial differences in social acceptance depended on girls' BMI, and the influence was greater in Whites than in African Americans. Cairney, Hay, Faught, Léger, and Mathers (2008) also found a correlation between BMI and self-competence in children. However, little is known about the effects of physical activity on psychosocial health, including self-competence and quality of life, among Chinese American children.

Improving health-related quality of life (HRQOL) has been a priority and a goal for health care providers. HRQOL encompasses domains of life (i.e., physical, emotional, social, and school) that are directly affected by changes in health, and its domains are aspects of life that are enhanced when a health condition is improved. Recently, HRQOL in overweight children has been examined. Results of several studies indicate that overweight children reported lower quality of life than children of normal weight reported (Friedlander, 2003; Swallen, 2005; Williams, 2005). Friedlander et al. (2003) and Williams et al. (2005) reported that overweight children had lower levels of quality of life in the physical health and psychosocial domains, whereas Swallen et al (2005) found that young adolescents (age 12-14) reported lower levels of quality of life in the social and school domains than their healthy counterparts reported. Besides the effect of weight on the quality of life in children, physical activity also has been suggested to have a positive effect on quality of life. Chen, Sekine, Hamanishi, Yamagami, and Kagamimori (2005) reported that Japanese children who participated in regular physical activity reported higher levels of quality of life than did those who never participated in physical activity. Unfortunately, little is known about factors related to quality of life in Chinese American children.

Social cognitive theory provides a guiding

framework for the study. The theory proposes that cognitive, behavioral, and other personal factors including preference, perceived quality of life, competencies, and environmental influences interact as determinants of each other. The learning and social influences occur both directly and vicariously from numerous resources, including parents and peers. The mutual action between cognitive, behavioral, and other personal factors is referred to as a triadic reciprocality model (Bandura, 1989, 2001, 2004). Social cognitive theory has been widely used to study children's health behaviors, including eating, physical activity, and weight issues. In this study, social cognitive theory was used to select relevant constructs and concepts (i.e., physical activity and weight issues) related to self-competence and HRQOL in Chinese American children. In addition, understanding the nature of self-competence and HRQOL in relation to physical activity level and children's weight status can help us develop culturally appropriate programs that improve Chinese American children's self-competence and HRQOL. Thus, this study was aimed at examining factors associated with self-competence and quality of life in Chinese American children.

Methods

A cross-sectional design was used to examine factors associated with self-competence and HRQOL in Chinese American children. The children in the study completed standardized questionnaires related to physical activity, self-competence, and HRQOL. Their parents completed questionnaires regarding their years of education and level of acculturation.

Procedure

Once the study was approved by the University of California, San Francisco, Committee on Human Research, 8- to 10-year-old self-identified Chinese American children and their parents were invited to participate in the study. We used a convenience sampling technique in this study. Participants were recruited from the Chinese community (i.e., public health centers)

and after-school programs in the San Francisco Bay area. Recruitment flyers and ads were posed and distributed at each study site. If parents were interested in taking part in this study, they contacted research assistants via phone or mail. The research assistants described the study to potential participants and gave them a letter of introduction and a research consent form to take home. Parents who were interested in the study signed and returned the consent form, providing their names and contact information to the research team. Children and parents were informed that they could refuse participation or withdraw from the study at any time.

The children and their parents completed all questionnaires at home and returned them in sealed envelopes within 2 weeks of recruitment into the study. Questionnaires for mothers were translated into Chinese and demonstrated adequate validity and reliability. Children completed questionnaires in English. All participating children and parents completed the questionnaires.

Approximately 105 study invitations were sent out, and 65 children and their parents participated in this study (response rate = 62%). Nearly half (49% [n = 32]) of the participating children were boys. The mean age of the children was 8.8 years (SD = 0.5). The mean age of the mothers was 38.9 years (SD = 6.9), and the mean age of the fathers was 43.7 years (SD = 6.3). Mothers had a mean of 13.7 (SD = 5.1) years of education, and fathers had a mean of 15.2 (SD = 5.5) years of education.

Parental Measures
Family Information. The 12-item parent questionnaire includes parents' and children's ages, parents' weight and height, parents' occupation(s), family income, and parents' levels of education. The questionnaire was written at a third-grade reading level and took approximately 5 minutes to complete. This questionnaire was developed by the first author and has been translated into Chinese and back into English by a professional translator. A pilot test to determine the questionnaire's readability

and accuracy was conducted in a group of 5 parents.

Suinn-Lew Asian Self-Identity Acculturation (SL-ASIA) Scale. The SL-ASIA scale was used to examine levels of acculturation (Suinn, 1998; Suinn, Khoo, & Ahuna, 1995). This 21-item multiple-choice questionnaire covers topics such as language (4 items), identity (4 items), friendships (4 items), behaviors (5 items), general and geographic background (3 items), and attitudes (1 item). Scores can range from a low of 1.00, indicative of low acculturation or strong Asian identity, to a high of 5.00, indicative of high acculturation or strong Western identity. The scale also permits classification as "bicultural," indicating that a person has adopted some Asian values, beliefs, and attitudes along with some Western values, beliefs, and attitudes. A Chinese version of SL-ASIA was developed by Suinn and used in several studies and had adequate validity (factor analysis) and moderate to good reliability (r = .79-.91) for Chinese Americans (Suinn, 1998; Suinn, Khoo, & Ahuna, 1995).

Children's Measures
Anthropometric Measures. After obtaining parental consent and the children's assent, the research assistants measured each child's body weight and height; the children wore lightweight clothes and no shoes. The Seca 214 Road Rod (Vogel & Halke GmbH & Co., Hamburg, Germany) portable stadiometer, which has a fine graduation of 1/8 inch (0.1 cm), was used to measure height. Children were instructed to have their head positioned in the Frankfort horizontal plane and to inhale; stretch height was then measured. Body weight was measured by using the 840 Bella Digital Scale (Vogel & Halke GmbH & Co.), which has a graduation of 0.2 lb (100 g). Scales were calibrated by following the instructions provided by the companies before each child was measured. BMI was calculated by dividing body mass in kilograms by height in meters squared. BMI has acceptable ranges of sensitivity and specificity (de Onis, 2004).

In this study, body weight and height were measured three times, and the mean of the three

measurements was used to calculate BMI. A BMI lower than the 5th percentile was defined as underweight, a BMI between the 6th and 84th percentile was defined as normal weight, and a BMI above the 85th percentile was defined as overweight and obese, based on the growth chart developed by the Centers for Disease Control and Prevention (CDC, 2000).

Children's Self-Administered Physical Activity Checklist. In this questionnaire, children were asked to recall activities that had occurred the previous day. The questionnaire contains 25 questions related to activities and 2 questions related to sedentary pastimes. The children in the study estimated the number of minutes they spent in each activity during three periods: before school, during school, and after school. They also were asked to report whether the activity caused them to "breathe hard or feel tired." The frequency and intensity of activities were scored only if the activities totaled 5 minutes or more in an intensity category during one of the three periods assessed. Total physical activity and sedentary time are computed. Moderate to vigorous physical activity metabolic equivalents, referring to energy expenditure, were computed on the basis of the reported frequency and intensity of the activity. This checklist provided a criterion with moderate validity (r = .57-.75) and moderate test-retest reliability (r = .60) (Sallis et al., 1996). Children were asked to record all activities during one weekend and two weekday 24-hour periods.

The Self-Perception Profile for Children. This 36-item questionnaire measures self-competence and includes six subscales: scholastic competence, social acceptance competence, athletic competence, physical appearance competence, behavioral conduct competence, and global self-worth (Harter, 1984). Each subscale contains six items. Items are scored on a Likert scale (from 1 to 4), with 1 representing low competence and 4 representing high competence. The Self-Perception Profile for Children is structured in a format that offers children alternative choices. Each child was first asked to decide which of two choices best describes him or her. For example, children were

asked to choose between "some kids would rather play outdoors in their spare time" and "other kids would rather watch TV." Then the children indicated whether the statement they chose was "really true" or "sort of true" about them. This type of format reduces the influence of social desirability in responding to questions. The factor structure is also stable across age groups. The internal consistency (alpha) of the measure was .77 in our study. Across all samples, reliabilities range from .75 to .86.

Pediatric HRQOL (PedsQL). The 23-item PedsQL Generic Core Scales measure quality of life in physical, emotional, social, and school functioning. The PedsQL comprises a child's self-report for children ages 5 to 18 and a parent proxy-report for children ages 2 to 18. A 5-point response scale is used for the child's self-report (0 = never a problem, 1 = almost never a problem, 2 = sometimes a problem, 3 = often a problem, 4 = almost always a problem). Items are reverse-scored and linearly transformed to a scale from 0 to 100 (0 = 100, 1 = 75, 2 = 50, 3 = 25, 4 = 0). A high score refers to better HRQOL. Scale scores are computed as the sum of the items divided by the number of items answered. The PedsQL has acceptable validity and reliability (from .80 to .88 for child's self-report and .86 to .90 for parents' report). In this study, we used the child's self-report (Schwimmer, 2003; Varni, 2001).

Data Analyses
Descriptive statistics were calculated initially for demographic characteristics and all major study variables. Outcome variables are children's self-competence and quality of life. Independent t tests and Pearson correlation coefficients were used to examine factors (sex, BMI, and physical activity level) related to outcome variables. To adjust for multiple comparisons, a p value was set at .01 to reduce type 1 error. All analyses were performed in SPSS 17.0 for Windows (SPSS, Inc., Chicago, Illinois).

Results

Sixty-five 8- and 10-year-old Chinese American children (49% boys and 51% girls) and their parents participated in the study. The mean BMI

was 18 (SD = 3.7) for the children. Approximately 45% of the boys and 28.1% of the girls had BMIs greater than the 85th percentile for age and sex according to growth charts from the Centers for Disease Control and Prevention. Of the overweight children, 62.5% were boys (n = 15) and 37.5% were girls (n = 9). Thirty-three percent of parents reported that their annual household income was less than $40,000, which is considered low income in the San Francisco Bay Area. The mean number of years of education among the parents was 13.7 (SD = 5.1). The mean acculturation score was 2.06, indicating a low level of acculturation.

Differences Between Boys and Girls in Weight Status
Descriptive statistics for the study variables are presented in Table I. Variables did not differ significantly between girls and boys. Independent t tests showed no difference in any of the outcome variables between overweight boys and boys of normal weight and overweight girls and girls of normal weight.

Associations between Physical Activity, Sedentary Activity, and BMI
No significant relationships were found between children's level of physical activity and BMI (r = -.41, p = .75) or children's sedentary activity and BMI (r = -.08, p = .54). In addition, no relationship was found between children's physical activity and sedentary activity (r = .03, p = .83).

Factors Associated With Self-Competence and Quality of Life
In the multiple regression models, children's gender, level of physical activity, sedentary activity, and BMI were entered as independent variables. Multiple regression models indicate that increased television viewing and computer time contribute to low competence on the physical appearance (sr2 = 0.08, p = .02) and to decreased quality of life in the social health domain (sr2 = .08, p = .02; Table II). Results also found that increased BMI is related to decreased self-competence in physical appearance and boys indicated higher level of athletic competence than girls (Table II).

Table I. Descriptive Statistics

	Mean (*SD*)		
Variable	All Children	Boys	Girls
Family Variables			
Acculturation score	2.06 (0.48)	2.05 (0.38)	2.07 (0.57)
Child Variables			
Body mass index	18.00 (3.7)	18.32 (3.11)	17.71 (4.26)
Physical activity, metabolic equivalents	728.00 (577.36)	826.70 (608.79)	632.30 (537.10)
Daily minutes watching television or on computer	59.00 (78.17)	75.23 (94.88)	43.26 (54.61)
Self-Perception Profile for Children			
Scholastic competence	3.00 (0.66)	3.05 (0.64)	2.95 (0.68)
Social competence	2.73 (0.62)	2.82 (0.66)	2.65 (0.58)
Athletic competence	2.72 (0.64)	2.91 (0.55)	2.53 (0.66)
Physical appearance	2.91 (0.69)	2.90 (0.70)	2.94 (0.69)
Behavioral conduct	3.10 (0.64)	3.01 (0.61)	3.17 (0.66)
Global self-worth	3.14 (0.61)	3.2 (0.68)	3.11 (0.55)
Pediatric Health-Related Quality of Life Inventory			
Physical functioning	81.43 (13.09)	80.54 (12.75)	82.30 (13.56)
Emotional functioning	67.30 (19.00)	66.30 (18.93)	68.28 (19.33)
Social functioning	80.63 (16.67)	78.00 (17.16)	83.28 (15.99)
School functioning	77.94 (15.20)	77.26 (14.54)	78.59 (16.03)

Table II. Significant Findings From Multiple Regression Summary

Outcomes	Predictor(s)[a]	$R^{2\,a}$	B	$sr^{2\,b}$	P^c
Self-Perception Profile for Children					
Athletic competence	Gender	.19	-0.28	.19	.02
Physical appearance	Television time	.14	-0.28	.08	.02
	Body mass index		-0.27	.07	.03
Pediatric Health-Related Quality of Life					
Social health domain	Television time	.08	-0.29	.08	.02

a 2 is the proportion of variance explained by the whole model.
bsr2 is the proportion of variance explained by an independent variable.
cp is the significance level of an independent variable.

Discussion

Results of this study indicate that Chinese American boys and girls have similar degree of self-competence and similar levels of physical activity and sedentary activity, except for athletic competence. Our study also suggests that increased sedentary time is related to low self-competence in physical appearance and low quality of life in social health in Chinese American children.

In this study Chinese American boys reported a higher degree of competence in athletic domain than girls. Differences between boys and girls in self-competence have been documented in other studies (Asci, Kosar, & Isler, 2001; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002). Jacobs and associates found that differences between girls and boys in self-competence are domain specific rather than global (Jacobs, et al., 2002). Gender difference in the perceived athletic competence has been found in other ethnic groups, such as Turkish children (Asci, et al., 2001).

Although Chinese American boys and girls had similar levels of physical activity and time spent in sedentary activity, low levels of sedentary activity have a great influence on self-competence in Chinese American children. The adverse effects of increasing sedentary activity, especially television viewing, have been reported in previous studies. The effects of increasing television viewing include increased risk for being overweight and for development of unhealthy eating habits in children (Faith et al., 2001; Goran, et al., 2003; Lowry, Wechsler, Galuska, Fulton, & Kann, 2002).

Our findings suggest that more time spent in sedentary activity and a higher BMI in Chinese American children are significantly associated with lower levels of self-competence with respect to physical appearance. This result is consistent with results of previous studies that showed a significant relationship between a high BMI and lower levels of self-competence in children (Brown, et al., 1998; Cairney, 2008). As current modern society highlights the importance of a person's body size, the

challenge to meet society's standards becomes a

struggle for many children. This assumption has been supported by other studies suggesting that concerns regarding one's weight and body dissatisfaction are common among young girls and boys as well as adolescents across ethnicity and socioeconomic status (Neumark-Sztainer et al., 2002; Robinson, Chang, Haydel, & Killen, 2001). Because this study did not measure children's concerns regarding their weight and their perceptions of health and beauty, future studies should include these factors when examining level of physical appearance competence or overall competence.

Our previous work suggests that overweight children tend to use eating food and drinking soda or juice and watching television as ways to cope with stress, although those are not effective coping strategies (Chen, & Kennedy, 2005). By using such ineffective coping strategies, Chinese American children are more likely to gain more weight and have a more negative perception of their body image as related to beauty and weight. However, because this study used a cross-sectional design, we cannot provide a conclusive rationale for the findings. Nonetheless our data suggest that high BMIs and high levels of sedentary activity are associated with lower levels of self-competence with respect to physical appearance in Chinese American girls. Health care providers must identify children with high BMIs and low levels of physical activity as early as possible to help those children avoid the adverse health consequences associated with lower self-competence.

Our study also found that increased sedentary time is related to low level of quality of life in social health domain in Chinese-American children. It is plausible that children who spent more time in watching TV and playing computer games have less time to be engaged in other activities with peers thus reduce their social skills. It is also plausible that children with less social skills tend to spend time in watching TV and playing computer games as ways to cope with loneliness. As studies have suggested that increased physical activity can improve quality

of life in children (Chen, Sekine, M., Hamanishi, S., Yamagami, T., & Kagamimori, S. , 2005; Kriemler et al., 2010), interventions aim to reduce sedentary activity and improve physical activity may improve health-related quality of life and health status in Chinese-American children.

The results of the study should be interpreted with caution because of the cross-sectional design, the limited age range, and the single geographical location. In addition, convenience sampling with primarily families of low acculturation limits the generalizability of the results and raises the possibility that children and families who participated in this study were more aware of health issues related to physical activity and obesity and had healthier lifestyles than were those children and families who declined to participate. Furthermore, because the study used only self-reported measures of physical activity, errors in measurement may have occurred. Use of observation technique and physiological measures may increase the reliability and validity of the study results. Future studies should include larger sample sizes, different age groups, and various geographical locations of Chinese American children. Examining changes in self-competence and the quality of life throughout children's different developmental stages and weight status and physical activity level is also warranted.

Conclusions

In conclusion, as self-competence and quality of life have been critical factors in children's health, understanding the factors related to self-competence and HRQOL is imperative for improving children's health. Despite the limitations of the study, the development of culturally and gender-appropriate programs that decrease sedentary activity and improve quality of life is critical for health promotion in the growing population of Chinese Americans.

References

Asci, F. H., Kosar, S. N., & Isler, A. K. (2001). The relationship of self-concept and perceived athletic competence to physical activity level and gender among Turkish early adolescents. *Adolescence, 36*(143), 499-507.

Bandura, A. (1989). Human agency in social cognitive theory. *Am Psychol, 44*(9), 1175-1184.

Bandura, A. (2001). Social cognitive theory: an agentic perspective. *Annu Rev Psychol, 52*, 1-26. doi: 10.1146/annurev.psych.52.1.1 52/1/1 [pii]

Bandura, A. (2004). Health promotion by social cognitive means. *Health Educ Behav, 31*(2), 143-164. doi: 10.1177/1090198104263660

Brown, K. M., McMahon, R. P., Biro, F. M., Crawford, P., Schreiber, G. B., Similo, S. L., et al. (1998). Changes in self-esteem in black and white girls between the ages of 9 and 14 years. The NHLBI Growth and Health Study. *J Adolesc Health, 23*(1), 7-19.

Cairney, J., Hay, J. A., Faught, B. E., Mathers, B. . (2008). Generalized self-efficacy and performance on the 20-metre shuttles run in children. . *American Journal of Human Biology 20*, 132-138.

CDC. (2000). National center for health statistics. . *http://www.cdc.gov/nchs/products/pubs/pubd/hestats/overwght99.htm*

Chen, J. L., & Kennedy, C. (2005). Cultural variations in children's coping behaviour, TV viewing time, and family functioning. *Int Nurs Rev, 52*, 186-195.

Chen, J. L., Yeh, C.H.,& Kennedy, C. (2007). Weight status, self-competence, and coping strategies in Chinese children. *Journal of Pediatric Nursing, 22*, 176-185.

Chen, X., Sekine, M., Hamanishi, S., Yamagami, T., & Kagamimori, S. . (2005). Associations of lifestyle factors with quality of life in Japanese children: A 3-year follow-up of the toyama birth cohort study. . *Care, Health and Development, 31*, 433-439.

de Onis, M. (2004). The use of anthropometry in the prevention of childhood overweight and obesity. *Int J Obes Relat Metab Disord., 28*, S81-S85.

Deforche, B., De Bourdeaudhuij, I., Tanghe, A., Debode, P., Hills, A. P., & Bouckaert, J. (2005). Role of physical activity and eating behaviour in weight control after treatment in severely obese children and adolescents. *Acta Paediatr, 94*(4), 464-470.

Eccles, J., Wigfield, A., Harold, R. D., & Blumenfeld, P. (1993). Age and gender differences in children's self- and task perceptions during elementary school. *Child Dev, 64*(3), 830-847.

Eyler, A. A., Brown, R. C., Burack, G., et al. (2003). The epidemiology of walking for physical activity in the United States. . *Medi Sci Sports Exerc, 35*, 1529-1536.

Faith, M. S., Berman, N., Heo, M., Pietrobelli, A., Gallagher, D., Epstein, L. H., et al. (2001). Effects of contingent television on physical activity and television viewing in obese children. *Pediatrics, 107*(5), 1043-1048.

Franklin, J., Denyer, G., Steinbeck, K. S., Caterson, I. D., & Hill, A. J. (2006). Obesity and risk of low self-esteem: a statewide survey of Australian children. *Pediatrics, 118*(6), 2481-2487. doi: 118/6/2481 [pii] 10.1542/peds.2006-0511

Friedlander, S. L., Larkin, E. K., Rosen, C. L., Palermo, T. M., & Redline, S. . (2003). Decreased quality of life associated with obesity in school-age children. *Arch Pediatr Adolesc Med, 157*, 1206-1211.

Goran, M. I., Ball, G. D., & Cruz, M. L. (2003). Obesity and risk of type 2 diabetes and cardiovascular disease in children and adolescents. *J Clin Endocrinol Metab, 88*(4), 1417-1427.

Harter, S., & Pike, S. . (1984). The pictorial scale of perceived competence and social acceptance for young children. *Child Development, 55*, 1969-1982.

Hesketh, K., Wake, M., & Waters, E. (2004). Body mass index and parent-reported self-esteem in elementary school children: evidence for a causal relationship. *Int J Obes Relat Metab Disord, 28*(10), 1233-1237.

Hill, J. (2004). Physical activity and obesity. *Lancet, 363*(9404), 182.

Jacobs, J. E., Lanza, S., Osgood, D. W., Eccles, J. S., & Wigfield, A. (2002). Changes in children's self-competence and values: gender and domain differences across grades one through twelve. *Child Dev, 73*(2), 509-527.

Kriemler, S., Zahner, L., Schindler, C., Meyer, U., Hartmann, T., Hebestreit, H., et al. (2010). Effect of school based physical activity programme (KISS) on fitness and adiposity in primary schoolchildren: cluster randomised controlled trial. *BMJ, 340*, c785.

Lohaus, A., Klein-Hessling, J., Ball, J., & Wild, M. (2004). The prediction of health-related behaviour in elementary school children. *J Health Psychol, 9*(3), 375-379.

Lowry, R., Wechsler, H., Galuska, D. A., Fulton, J. E., & Kann, L. (2002). Television viewing and its associations with overweight, sedentary lifestyle, and insufficient consumption of fruits and vegetables among US high school students: differences by race, ethnicity, and gender. *J Sch Health, 72*(10), 413-421.

Matheson, D. M., Killen, J. D., Wang, Y., Varady, A., & Robinson, T. N. (2004). Children's food consumption during television viewing. *Am J Clin Nutr, 79*(6), 1088-1094.

McCullough, N., Muldoon, O., & Dempster, M. (2009). Self-perception in overweight and obese children: a cross-sectional study. *Child Care Health Dev, 35*(3), 357-364. doi: CCH924 [pii] 10.1111/j.1365-2214.2008.00924.x

Neumark-Sztainer, D., Croll, J., Story, M., Hannan, P. J., French, S. A., & Perry, C. (2002). Ethnic/racial differences in weight-related concerns and behaviors among adolescent girls and boys: findings from Project EAT. *J Psychosom Res, 53*(5), 963-974.

O'Loughlin, J., Paradis, G., Renaud, L., Meshefedjian, G., & Gray-Donald, K. . (1998). Prevalence and correlates of overweight among elementary schoolchildren in multiethnic, low income, inner city neighborhoods in Montreal, Canada. *Annual of Epidemiology, 8*, 422-432.

Robinson, T. N., Chang, J. Y., Haydel, K. F., & Killen, J. D. (2001). Overweight concerns and body dissatisfaction among third-grade children: the impacts of ethnicity and socioeconomic status. *J Pediatr, 138*(2), 181-187.

Rooney, B. L., Gritt, L. R., Havens, S. J., Mathiason, M. A., & Clough, E. A. (2005). Growing healthy families: family use of pedometers to increase physical activity and slow the rate of obesity. *Wmj, 104*(5), 54-60.

Sallis, J. F., Prochaska, J. J., Taylor, W. C. (2000). A review of corraltes of physical activity in children and adolescents. *Medi Sci Sports Exerc, 32*, 963-975.

Sallis, J. F., Strikmiller, P. K., Harsha, D. W., Feldman, H. A., Ehlinger, S., Stone, E. J., et al. (1996). Validation of interviewer- and self-administered physical activity checklists for fifth grade students. *Med Sci Sports Exerc, 28*(7), 840-851.

Schmitz, K. H., Jacobs, D. R., Jr., Hong, C. P., Steinberger, J., Moran, A., & Sinaiko, A. R. (2002). Association of physical activity with insulin sensitivity in children. *Int J Obes Relat Metab Disord, 26*(10), 1310-1316.

Schwimmer, J. B., Burwinkle, T. M., & Varni, J. M. . (2003). Health-related quality of life of severely obese children and adolescents. *JAMA, 289*, 1813-1819.

Sollerhed, A. C., Apitzsch, E., Rastam, L., & Ejlertsson, G. . (2008). Factors associated with young children's self-perceived competence and self-reported physical activity. *Health Education Research, 23*, 125-136.

Sonstroem, R. J. (1984). Exercies and self-esteem. *Exerc Sport Sci Rev, 12*, 123-155.

Stradmeijer, M., Bosch, J., Koops, W., & Seidell, J. (2000). Family functioning and psychosocial adjustment in overweight youngsters. *Int J Eat Disord, 27*(1), 110-114.

Strauss, R. S., Rodzilsky, D., Burack, G., et al. (2001). Psychosocial correlates of physical activity in healthy children. *Arch Pediatr Adolesc Med, 155*, 897-902.

Suinn, R. M. (1998). Measurement of Acculturation of Asian Americans. *Asian Am Pac Isl J Health, 6*(1), 7-12.

Suinn, R. M., Khoo, G., & Ahuna, C. (1995). The Suinn-Lew Asian Self-Identity acculturation scale: cross-cultural information. . *Journal of Multicultural Counseling and Development, 27*, 139-148.

Sung, R. Y., Yu, C.W., So, R.C., Lam, P.K., & Hau, K.T. . (2005). Self-perception of physical competences in preadolescent overweight Chinese children. *Eur J Clin Nutr, 59*, 101-106.

Swallen, K. C., Reither, E. N., Haas, S. A., & Meier, A. M. (2005). Overweight, obesity, and health-related quality of life among adolescents: the National Longitudinal Study of Adolescent Health. *Pediatrics, 115*, 340-347.

Varni, J. W., Seid, M., Kurtin, P. S. . (2001). PedsQL 4.0: reliability and validity of the pediatric quality of life inventory version 4.0 generic core scales in health and patient populations. *Medical Care, 39*, 800—812.

Williams, J., Wake, M., Hesketh, K., Maher, E., & Waters, E. (2005). Health-related quality of life of overweight and obese children. *JAMA, 293*, 70-76.

Wolf, A. M., Gortmaker, S. L., Cheung, L., Gray, H. M., David, Herzog, Graham, & Golditz (1993). Activity, inactivity, and obesity: Racial, ethnic, and age differences among schoolgirls. *American Journal of Public Health, 83*(11), 1625-1627.

Yarcheski, A., Mahon, N.E., Yarcheski, T.J., & Cannella, B.L. (2004). meta-analysis of predictors of positive health practices. *J Nurs Scholarship, 36*, 102-108.

Yin, Z., Davis, C. L., Moore, J. B., & Treiber, F. A. (2005). Physical activity buffers the effects of chronic stress on adiposity in youth. *Ann Behav Med, 29*(1), 29-36.

Young-Hyman, D., Schlundt, D. G., Herman-Wenderoth, L., & Bozylinski, K. (2003). Obesity, appearance, and psychosocial adaptation in young African American children. *J Pediatr Psychol, 28*, 463-472.

Author Information
Jyu-Lin Chen, PhD, RN, CNS*
Associate Professor
University of California, San Francisco
Department of Family Health Care Nursing
2 Koret Way
Box 0606
San Francisco, CA 94143
Phone- (415) 502-6015
Fax- (415) 753-2161
Email: jyu-lin.chen@nursing.ucsf.edu

Mary Ellen Wilkosz, PhDc, APRN-BC, FNP
Assistant Professor
Department of Nursing, Sonoma State University, Rohnert Park, CA 94928

* corresponding author