

## The Relationship between Self-esteem, Body Image and Eating Attitudes of Children Accessing Community Child Centers

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### Abstract

*The purpose of this study is to examine the self-esteem, body image and eating attitudes of children who access a community child center and its gender differences, and to test a model linking children's self-esteem and body-image to eating attitudes. This study employed a cross-sectional survey design. Participants were 153 children from low income families. The results show no significant differences in self-esteem and body image between boys and girls, although they differed significantly in bulimia. The model was tested using path analysis techniques within structural equation modeling. The model fit indices suggests that the full mediation model adequately fits the data ( $\chi^2 = 10.67$ ,  $df = 5$ ,  $p = 0.06$ ,  $TLI = 0.94$ ,  $CFI = 0.97$ ,  $RMSEA = 0.08$ ). Children's self-esteem had a positive direct effect on their body image, which in turn had a direct negative effect on eating attitudes). The findings from this study demonstrate the fundamental importance of self-esteem and its relationship with body image, and eating attitudes, thus increasing the positive body image may be the key to children's eating disorder.*

**Keywords:** Self-esteem, Body image, Eating attitude, low income families, structural equation modeling

### 1. Introduction

In recent years, the increase in family breakdown and child poverty were important social issues which raises the need of social support for low-income children. The tangible results shown in the last revision of the Child Welfare Act of 2004 enacted the emergence of community child centers [1]. Community child centers were started by a non-governmental organization consisting of altruists and volunteers who sympathized for the at risk children in low socioeconomic groups [2]. This organization raised public awareness for the need to provide afterschool care and education for these children, and is run by dedicated social workers and volunteers. At the national level, legal and institutional activities helped make remarkable progress in improving the quantity and quality of care provided by these community child centers. In 2013, the number of institutes was about 4,036 nationwide, with 109,256 enrolled children. [3].

According to "installation and operation of a community child center" issued Ministry of health and welfare of Korea, the subjects of community child centers are adolescents under 18 years old who are in need of care, and children from poor social backgrounds who suffer abuse or neglect [3]. These children are mostly from low-income families, multicultural

families or have disabilities. Thus the community child center has several important roles involving the provision of child care, afterschool education programs, and a healthy physical environment to ensure they are well looked after [4]. A community child center could be vital in providing a safe environment for these children in need and aid their holistic development. In particular, because the majority of children have the opportunity to only have one meal a day in the center, there is an important role in providing a well-balanced diet with adequate nutrition, as well as education in healthy eating habits and maintaining proper hygiene.

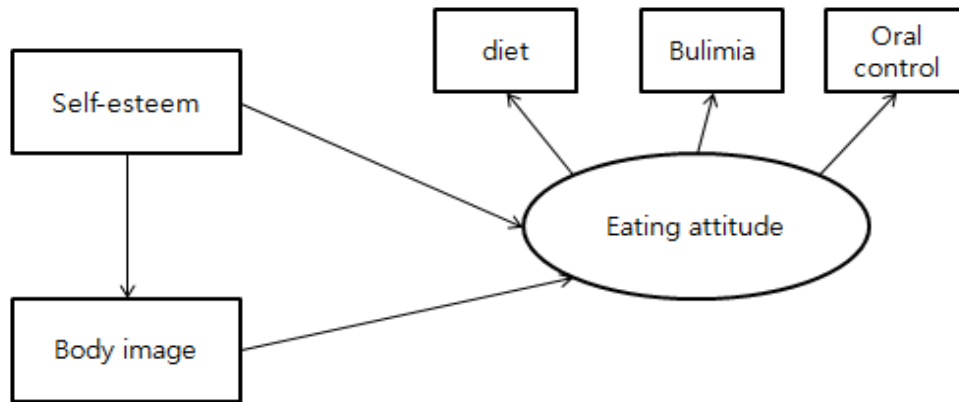
However, a number of researches have consistently shown that these children are prone to nutritional deficits. Recently investigators have examined the students in community child centers, which showed a lower nutrient intake than the control group due to higher rate of skipping breakfasts and a lower rate of having snacks [5]. Because families of the community child center group mostly consists of dual-income parents, low-income or single parent families, the children are easily undernourished with poor parental guidance with regards to food intake. Recent evidence suggests that the children's intakes of fruit, juice, and vegetables do not meet the the recommended minimum of five daily servings, placing them at increased risk for development of cancer and other diseases [6]. High balance nutrition is an important component in physical and psychological growth of children, and plays a key role in preventing disease and promoting good health. Therefore, community child centers are important social environments that influence children's eating practices by controlling accessibility of unhealthy food, and educating meal structure and food modeling [6].

However, the local children's centers are mainly focused on the educational program to increase their academic profiles and nutritional health is not seen as important issues. Additionally local community child centers are usually small and are financially inadequate which renders providing high quality food and guidance for correct eating habits difficult [5].

There are some findings about the development of children using community care center [1, 2, 4, 7] and the management of meal system in local community child centers [8]. According to the research results of meal system satisfaction of children in local community child centers, there are a lot of food management problems, such as an undertrained workforce, poor hygiene practices and budget restraints for high quality food provision [8]. A researcher suggested that the government should create a guideline for meals and food education service for community child centers [2].

Eating disorders in children are an important public health problem. Early dieting and related behaviors are risk factors, which in the long run may be associated with chronic body image problems, weight cycling, obesity, and eating disorders [9]. However, few studies have examined the relationship among these variables, which is an important gap in the literature given current appreciation of the essential interaction between eating attitude and other factors. Thus, the aim of this study was to examine the gender differences in children's self-esteem, body image and eating attitudes and to test a model linking eating attitude, body image, and self-esteem of children enrolled in a community child center.

The purpose of this study is to: (i) identify the gender differences in children's self-esteem, body image and eating attitudes (ii) determine the relationship between children's eating attitude, body-image, and self-esteem; and (iii) identify the mediating role of body image in children's eating attitude in low income families (Figure 1).



**Figure 1. Hypothesized Model**

## **2. Methods**

### **2.1. Design**

This study utilized a cross-sectional research design that investigated the linking of eating attitude, body image, and self-esteem of children attending community child center in South Korea.

### **2.2. Participants**

Our sample of 175 children comprised of elementary school students aged 7-16 years, from five community child centers from Gwangju, and three from Kyungi and Chungnam Province, Korea. After eight research assistants explained the purpose of the study, data confidentiality, and possibility of withdrawal to the participants, written informed consent from these children were obtained. It required approximately 20 minutes to complete the questionnaires. Of the 175 children that were invited, 153 finished the questionnaires giving an attrition rate of 12.5%.

### **2.3. Measurements**

**2.3.1. Eating Attitudes Test:** Eating attitudes test is probably the most widely used test used to assess “eating disorder risk” based on attitudes, feelings and behaviors related to eating, and eating disorder symptoms. This scale was used as a screening instrument in the 1998 National Eating Disorders Screening Program and has been used in many other studies to identify individuals with possible eating disorders [10]. The Korean Version of Eating Attitudes-26 was measured using 2-point Likert-type scale with 26 questions from the original tool by Garner and Garfinkel (1979) [10]. The scale ranges from 0 (*disagree*) to 1 (*agree*), with higher scores indicating greater eating disorder risk. The Cronbach’s alpha for the current study was .80.

**2.3.2. Body Image:** Body image was measured using a 4-point Likert scale with 12 questions from the translated version [11] of the body esteem by Mendelson, Mendelson and White (2001) [12]. Body image scale was to measure body perception and satisfaction in children. The scale is ranging from 1 (*strongly disagree*) to 4 (*strongly agree*), with higher scores

indicating greater positive body image. The Cronbach's alpha for the previous study was .75 [11], and that of the current study was .74.

**2.3.3. Self Esteem:** Children's self esteem was measured using 4-point Likert scale with 10 questions from the original tool by Rosenberg (1965) [13]. The Rogenberg's self esteem scale is designed to measure children's general feelings about themselves. The scale ranges from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores indicating greater self-reported levels of self-esteem. The Cronbach's alpha for the current study was .87.

## 2.4. Data Analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) (version 17.0) and the Analysis of Moment Structures (AMOS) statistical software programs (version 17.0). Descriptive statistics for all study variables, as well as the reliability assessment of the study instruments, were computed. T-test was used to analyze the gender differences. The hypothesized model in this study was analyzed using structural equation modeling (SEM) techniques. All observed variables exhibited multivariate normality. Missing data were estimated using the full information maximum likelihood (FIML) method (For the SEM, a goodness of fit as well as a Chi-square were assessed.).

These included omnibuses fit indices such as Chi-square ( $\chi^2$ ) and incremental fit indices such as Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI). The  $\chi^2$  is interpreted as the test of the difference between the hypothesized model and the just identified version of the model. Low non-significant values are desired [14]. However,  $\chi^2$  is very sensitive to the sample size, and thus, in a model with a relatively large sample size, the null hypothesis is expected to be rejected almost all of the time. Because of this limitation, the incremental fit indices were also used. The fit indices indicate the proportion of the improvement of the hypothesized model relative to a null model, typically one assuming no correlation among the observed variables. The generally agreed-upon critical value for the CFI and TLI is 0.90 or higher [14]. In addition, the Root Mean Square Error of Approximation (RMSEA) was used and evaluated using the criteria that a low value (between 0 and .06) is indicative of a good-fitting model. The study also examined the mediating effects of body image on the children's eating attitude.

## 2.5. Ethical Consideration

Prior to collecting the data, the decision regarding consent for participation was made by guardians in community child center. Children also received the information on this study including the purpose, potential risks and benefits of this study and data collection procedures. Children who were reluctant to participate in this study, they could refuse for participation at any time.

## 3. Results

### 3.1. Demographic Characteristics

The demographic profile of the sample is presented in Table 1. The total population is 153 children using community child centers. Regarding the proportion of grade, 26.8% of participants were 4<sup>th</sup> grade, 19.0% of participants were 1<sup>st</sup> grade, 16.3% of the participants were 2<sup>nd</sup> grade, 15.7% of the participants were 5<sup>th</sup> grade, 13.7% of the participants were 3<sup>rd</sup> grade, and 8.5% of the participants were 6<sup>th</sup> grade. Regarding the proportion of gender, 52.3%

of participants were boy and 47.7% of participants were girl. Mean age of participants was 10.29( $SD=1.69$ ).

**Table 1. Demographic Characteristics of the Sample**

Variable	Category	Frequency	Percent
grade	1	29	19.0
	2	25	16.3
	3	21	13.7
	4	41	26.8
	5	24	15.7
	6	13	8.5
	Total	153	100.0
gender	boy	80	52.3
	girl	73	47.7
	Total	153	100.0

### 3.2. Descriptive Statistics

Table 2 presents the means, standard deviations. The overall mean of the children's self-esteem and body-image was somewhat positive ( $M = 3.07$  on a 5-point scale,  $M = 2.61$  on a 4-point scale). The children's eating attitude was somewhat negative (.55 on a 2-point scale).

**Table 2. Mean and SD of Self Esteem, Body Image, and Eating Attitude**

Variable	<i>M</i>	<i>SD</i>
Self-esteem	3.07	.66
Body image	2.61	.53
Eating attitude	.55	.35
Diet	.59	.40
Bulimia	.36	.47
Oral control	.63	.45

Initial tests examined the dependent variables across gender (see Table 3). Boys and girls did not differ significantly on self esteem and body image ( $t = 1.35$ ,  $t = -0.09$ ), total scores of eating attitude ( $t=1.12$ ), and diet and oral control ( $t = .27$ ,  $t = 0.32$ ). However, boys and girls differed significantly on bulimia. ( $t = 2.84$ ,  $p<.05$ ). Boys also reported a stronger urge to overeat than girls.

**Table 3. The Differences in Self Esteem, Body Image, and Eating Attitude by Gender**

Variable	Category	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>t</i>
Self-esteem	boy	80	3.00	.60	-1.35
	girl	73	3.14	.73	
Body image	boy	80	2.60	.50	-.09
	girl	73	2.61	.56	
Eating attitude	boy	80	.58	.37	1.12
	girl	73	.51	.33	

Diet	boy	80	.59	.43	.27
	girl	73	.57	.36	
Bulimia	boy	80	.46	.53	2.84*
	girl	73	.25	.36	
Oral control	boy	80	.65	.46	.32
	girl	73	.62	.44	

\* $p < .05$ .

### 3.3. Correlations

Table 4 presents inter-correlations among major study variables. The results of a preliminary Pearson's correlation analysis revealed that children's self-esteem and body image were significantly correlated with their eating attitudes. Children's self-esteem was positively correlated with their body image ( $r = 0.58, p < .001$ ) and was negatively associated with eating attitudes ( $r = -0.18, p < .001$ ). Children's body image was negatively related to eating attitude ( $r = -0.26, p < .001$ ).

**Table 4. Means, SD, Range, and Correlation Coefficients for Major Study Variables**

Variable	Body image	Eating attitude	Diet	Bulimia	Oral control
Self-esteem	.58***	-.18***	-.14	-.23**	-.08
Body image	1	-.26***	-.21*	-.19*	-.26**
Eating attitude		1	.89***	.78***	.74***
Diet			1	.57***	.45***
Bulimia				1	.45***
Oral control					1

\*\*\*  $p < .001$ . \*\*  $p < .01$ . \*  $p < .05$ .

### 3.4. The Model Testing

*Overall goodness of fit of hypothesized, direct effect, and final structure model*

The initial analysis of the hypothesized model revealed a little inadequate fit to the data ( $\chi^2 = 10.07, df = 4, p = 0.04, CFI = 0.95, TLI = 0.91, RMSEA = 1.00$ ). All specified paths were significant except the path from the self-esteem to eating attitude (See Table 5). To improve model fit, we tested a competitive model to find out whether children's body image has fully mediated the relationship between self-esteem and eating attitude. Also, we have tested an alternative model which children's self-esteem and body image directly influence in eating attitude. Figure 2 depicts the significant path in the full mediation model. All the model fit indices demonstrated good support for full mediation model ( $\chi^2 = 10.67, df = 5, p = 0.06, CFI = 0.97, TLI = 0.94, RMSEA = 0.08$ ). However, the analysis of the direct effect model revealed poor fit to the data ( $\chi^2 = 72.30, df = 5, p = 0.30, CFI = 0.62, TLI = 0.24, RMSEA = 1.00$ ). Table 6 presents the summary fitting results for initial, alternative, and final models. The results indicated that the final structural model fit the data well. Children's self-esteem had a significant positive direct effect on their body image ( $\beta = 0.58, p < .001$ ) and a negative indirect effect on their eating attitude via body image ( $\beta = -0.30, p < .001$ ) (See Table 7). This

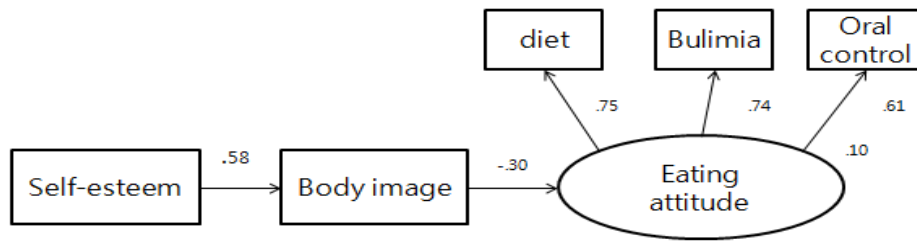
result showed that children's in low income families with a higher self-esteem and a higher body image tended to have lower levels of eating attitudes.

Children's self-esteem indirectly affected their eating attitude through their body image (See Table 8). The standardized direct and indirect effects are presented in Table 8. Furthermore, SMC, which explains the effect of children's self-esteem and body image on their eating attitude, was .10.

**Table 5. Regression Weights of Research Model**

	Estimate (unstandardized)	Estimate (standardized)	S. E	C. R
Self esteem --> body image	.46	.58***	.05	8.77
Self-esteem --> eating attitude	-.04	-.09	.05	-0.79
Body image --> eating attitude	-.14	-.24*	.06	-2.16

\*\*\* $P < .001$ , \* $P < .05$



**Figure 2. Final Structure Model**

**Table 6. Model Fitness Index for Hypothesized Model, Direct Path Model, and Final Structure Model**

Model	$\chi^2$	Df	p	TLI	CFI	RMSEA	$\Delta\chi^2$
Direct path model	72.30	5	.30	.24	.62	1.00	62.23
Hypothesized model	10.07	4	.04	.91	.95	1.00	-
Final structure model (full mediation model)	10.67	5	.06	.94	.97	.08	.60

\*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 7. Regression Weights of Final Model**

	Estimate (unstandardized)	Estimate (standardized)	S. E	C. R
Self esteem --> body image	.46	.58***	.05	8.77
Body image --> eating attitude	-.17	-.30**	.05	-3.16

\*\*\* $P < .001$ , \* $P < .01$

**Table 8. Direct and Indirect Standardized Coefficient for the Final Model Structure**

Structural paths	standardized direct effect( $\beta$ )	standardized indirect effect( $\beta$ )	SMC
Self esteem --> body image	-.58***	-	.34
Self-esteem --> eating attitude	-	-0.17**	.10
Body image --> eating attitude	0.30***	-	

\*\*\* $P < .001$ , \*\* $P < .01$

#### 4. Discussion

Understanding the eating attitudes and behavior of children is important in terms of their overall health. Previous research show that eating habits acquired in childhood persist through to adulthood [15, 16], and the effects of poor childhood nutrition shows its effects in later adult life. [17]. Because eating disorders affect a considerable percentage of the adolescent population and are recently beginning to appear at earlier ages [18], the early detection and prevention of these problems are of paramount importance and priority.

This study examined the relationship between children's self-esteem, body image, and their eating attitude across gender. Boys and girls did not differ significantly on their self-esteem. The outcomes of this study are partly consistent with a recent study about gender differences in domain-specific self-esteem [19] Gentile *et al.*, (2009) [19] found that there were no significant gender differences in academic, social acceptance, family, and affect self-esteem. However, men scored significantly higher than women on physical appearance, athletic, personal self, and self-satisfaction self-esteem, women scored higher than men on behavioral conduct and moral-ethical self-esteem. The results showed that the gender differences in self esteem levels stem from the gender differences in competence and performance levels. Also physical appearance seemed to be a factor that affects women's self esteem more than men. Women's lower self-esteem comes not from actual deficits but mediated by reflected appraisals.

Boys and girls did not differ significantly in body image. The outcomes of this study are partly consistent with previous study about gender differences. Among children 6 and 7 years old, gender differences in body image have not always been found [20]. But gender differences for body image have consistently been found for children as young as 8 years of age. Girls' body satisfaction and perceptions of their attractiveness decrease during the teen years, while boys' increase or remain the same [21]. Such gender differences may be due to the fact that sociocultural messages about ideal body size for males and females are internalized after 8 years of age. More research is needed to determine why gender difference emerges at this age.

Boys and girls did not differ significantly in eating disorder. This finding is partly consistent with previous study about gender differences. Gender differences for dieting and related behaviors as assessed by the ChEAT and other similar instruments tend not to become apparent until children are 10 years of age [22, 23]. But in this study boys reported a stronger urge to overeat than girls. Boys' stronger urge to overeat may be related to their poverty, as they are from a poor socioeconomic background and may not be provided with an adequate regular meal. Further studies concerning the variable predicting the eating disorder of children in low income family is needed.

This study determined the relationship between the children's self-esteem, body image, and their negative eating attitude. Children's self-esteem was significantly related to eating attitude as well as body image. That is, children's higher self-esteem promoted positive body



image and lowered the eating disorder symptom of children in the community child center. The outcomes of this study are partly consistent with those of previous studies that addressed the importance of self-esteem by focusing on negative eating attitude and body image [24, 26]. Self-esteem has been described variously as a predictor of human behavior, a cue to how others react to us, and a fundamental human motive [26]. Moreover, there is substantial belief and moderate evidence that self-esteem is an index of psychological well-being [27]. This result suggests that a positive self-evaluation, particularly with regard to physical and psychological characteristics, seems to be a protective factor [28].

Children's body image mediated the link from self-esteem to eating disorder. Previous studies showed that low self-esteem indirectly influenced on eating disorder through body dissatisfaction in middle aged women [29]. Poor body image and body dissatisfaction have been viewed more broadly as facets of poor self-image and self-concept [30]. Therefore, body image is viewed by some researchers as a reflection of one's general self-worth. Also, Body image concerns among girls and boys have been found to be related to eating attitudes and behaviors as assessed by the Children's Eating Attitude Test (ChEAT) [31]. Similarly, for both girls and boys, body image concerns are also related to other measures of dieting cognitions and behaviors [32]. These findings suggest that children's positive body image and body satisfaction should be taken into account in eating attitude programs to reduce children's eating disorders in low income families [33].

## Acknowledgement

This research was supported financially by Namseoul University in 2014.

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