

## A Study on the Actual Conditions of Brassiere Wearing for Girl Students

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### Abstract

The purpose of this study is to help develop high quality brassieres with functionality and comfort, fitting adolescents' physical features during their growth period. This study conducts a comparative analysis of juvenile brassiere and adult brassiere to identify the problems of brassieres in the market. The raw data for this study was processed by SPSS 10.1.

The results of this study are summarized as follows:

1. The results of this survey show that the girls' satisfaction of their breasts has correlations between breast protrusion degree and volume. The girls think that if they have protrusive breasts their breast volume is big, and their breast satisfaction level shows high.
2. The results show that the objective of brassiere wearing is to prevent breasts sag and rupture, make good breast shape, balance their entire body shape, and make beautiful outer garment line. Brassiere functions are to prevent jiggle of breasts, make a good body line, and cover the nipples. For the grader school students, they are wearing brassiere to make a good balanced body and as their breasts developed, they are wearing brassiere for beautiful body shape not just to cover up their breasts.
3. In regard to brassiere cup size recognition, as students have higher grade at school, they have better recognition about their cup size. As they are better aware of their cup size, they have better satisfaction with their cup size. Therefore, choosing the right size of brassiere for their bust is very important.
4. Girl students' brassiere preference shows that 317 students (56.9%) prefer white for brassiere colors, following pink and flesh color. Their most preferred brassiere material is cotton (354 people, 63.6%) because cotton is not sensitive even for weak skin. For brassiere style, 273 students (49%) prefer round style, following spots and mold. Their most preferred brassiere style is stake. In addition, brassiere should not press their breasts because their breasts are developing during puberty period.

**Key Words** : satisfaction of breast and brassiere, preference of brassiere,  
actual conditions of brassiere wearing

## I . Introduction

According to the statistics of the Korea Textile Industry Federation (2003), the clothes market in Korea was approximately 12.9 trillion won in 2002, with the underwear market for 1.034 trillion won. Underwear out of the domestic clothing market has the ratio of 8% and it has larger growth rate than that of other items.<sup>1)</sup>

Meanwhile, the stage of physical development begins from 10 years of age for female, and the physical development is getting matured at around 15 years of age.<sup>2)3)</sup> The population of female students, from 10 years of age when the physical development begins to 15 years of age when the body shape is formed, takes around 12–13% of the entire population. The lingerie market for girl students has shown the possibility of growth even in the difficult economic situations. In particular, it has emerged as a new niche market as the junior lingerie brands, such as 'Solb', 'Impression', 'Yes', 'Petitlin' and others have advanced into the market.

In recent years, the clothing industry of Korea had the marketing fever for Tweens for adolescent time generation. The Tweens is an abbreviation for between, which generally means the children of 8–14 years of age. However, South Korea shows some difference in growth stage or sentimental aspect and 10–16 years of age is considered as applicable for Tweens generation.<sup>4)</sup>

The youth are the main consumers for recent junior market. Under the cultural environment where the internet has been dominating, these young people focus on the popular style to fit into the same culture code in the same group or the casual wear shown

on the recent junior magazines. Given the fact, the market targeting this age group is expected to grow rapidly in the near future.

The case of youth lingerie market also has steady interest of youth by the lingerie companies with the new brands for youth launching in recent years. These brands have features: colorful & splendid color, simple & cuddly design, and affordable price. They only focus on the external designs to intrigue the youth with lack of attention in their bodily features. Particularly, for a female student, the growth rate at around 11–13 years of age increases drastically, and at around 13 years of age, the individual difference becomes significant. Around the time of menarche, the change of body diversifies, and after the age of 15, the growth begins to slow down. The breast, the secondary implication of adolescent female students, begins to develop in various types and shapes from the initial stage of having the nipples with the growth phenomenon of body with the breast type with entire breast to grow, breast with adult type and others.

<sup>5)6)7)8)9)10)11)</sup> Accordingly, the breast type of young female students has significant difference following the individual trait and body shape. Therefore, it is important to develop such brassieres that consider the type and size of their breasts.

The current brassiere products are manufactured based on the standard breast types of women in 20s whose change is moderated with the body shape in optimal conditions. They are inappropriate for the youth whose physical development is still ongoing by age. In addition, the size dimension of brassiere under the Korea Industrial Dimension (KS K 0070: 1999) also presents only the basic parts without presenting

the reference body dimension needed for the brassiere production. It is insufficient for domestic manufacturers that lack the systematic brassiere size specifications and brassiere patterns. So they depended on individual skills of brassiere designers and modelists<sup>12)</sup> to improve the size appropriateness of brassiere products.

Therefore, this study aims to examine the reality of brassiere wear for the adolescent female students of 12 to 16 years of age who begin the secondary gender character for the breast type. It also examines the currently available brassieres on the market and investigates the preference on the brassiere to provide help on developing outstanding brassiere products with great functionality in a way to calibrate the brassiere of the youth for the balanced body shape.

## II. Method of Research and Procedure

### 1. Subject of Survey

The subjects of this study are the early adolescent female students at the age of 12–16 whose stage of physical development begin. The selection of the subjects was made randomly for the middle school students in the Gyeonggi-do, Gangnam and Gangbuk areas with the 577 questionnaires. With the returned questionnaires of 565 copies, 8 copies were excluded for their incomplete responses, and 557 copies were utilized as the analysis data.

### 2. Survey Method

The questionnaire method was used for this study, and the preliminary inquiries were made from December 15, 2004 to January 6, 2005, and implemented the preliminary survey from January 17, 2005 to January 28, and with the final questionnaires with the supplementary context, the main survey was implemented from February 1, 2005 to March 9. The survey method is used with the free indication method.

The questionnaires used in this study was for the survey of reality of brassiere wearing and the preference by the early adolescent females, and the measurement tools for the questionnaire of this survey were a total of 30 questions composed with the questions used in the advance studies and the questions with the advisement of designers who currently work for the lingerie companies. The questionnaires are composed on the inquiries to find out the general background of the subjects, questions on reality of wearing, questions on degree of satisfaction, and questions on the trend of purchase.

### 3. Data Processing and Analysis Method

Analysis of collected data of 557 questionnaires were implemented with the basic statistical quantity analysis of frequency, percentage, average, standard deviation and others for each inquiry with the SPSS 10.1 statistical program, for the cross analysis, ANOVA (analysis of variance), correlation analysis. The post verification is made in the Duncan test. The 5 point system is analyzed with very unsatisfied for 1 point, and very satisfied for 5 points.

### III. Research Results and Consideration

#### 1. Statistical Variables

The subjects for survey on brassiere use of the adolescent girl students were middle school girl students residing in Gangnam, Gangbuk, and Gyeonggi-do areas, with 171 students, 234 students and 152 students, respectively.

The average age of the subjects was 13.85 years of age, average age of 160cm, and weight of 48kg. The age distribution of the subjects was shown to be 12 years of age for 11.85% (66 students), 13 years of age for 27.29% (152 students), 14 years of age for 29.98% (167 students), 15 years of age for 25.13% (140 students), and 16 years of age for 5.75% (32 students).

The distribution of each school class is surveyed of as 1st class for 36.68% (204 students), 2nd class for 22.26% (124 students), and 3rd class for 41.11% (229 students) that the ratio of 1st class and 3rd class showed similarly with 2nd class had slightly lower ratio.

The height of the subject students ranged from the minimum of 139cm up to 172cm, with the average of 160cm and the standard deviation for 5.6cm. For the height group, it showed of 154cm or shorter for 15.98% (89 students), 154cm or taller and 158cm or shorter for 23.34% (130 students), 158cm or taller and 162cm or shorter for 28.55% (159 students), 162cm or taller and 166cm or shorter for 22.62% (126 students), and 166cm or taller for 9.51% (53 students).

The weight of the subject students ranged from the minimum of 31kg up to 78kg, with the

average of 48.18kg and the median figure of 48kg, and the mode of 50kg. For the weight distribution, it showed of less than 40kg for 10.78% (60 students), 40kg or more but less than 45kg for 22.62% (126 students), 45kg or more but less than 50kg for 36.62% (204 students), 50kg or more but less than 55kg for 19.93%(111 students), and 55kg or more but less than 60kg for 10.05% (56 students).

Depending on the age, the difference of height or weight was analyzed for each age, and the 12 was under 154cm, 13 years of age between 154–158cm, 14 and 15 years of age between 158–162cm and 16 years of age between 158–166cm of height, and less than 40kg for 13 years of age, 40–45kg for 13 years of age, 45–50kg for 15 years of age that there was a noticeable difference between the height and weight for each age.

Depending on the region, the difference of height or weight was analyzed, and the height in Gangnam and Gangbuk areas had the range of 158cm–162cm, and the Gyeonggi-do area had the range of 154cm–158cm. The weight in the Gangbuk and Gyeonggi-do had most distribution for the range of 40kg to 50kg, while for the Gangnam area, the greatest distribution was in the range of 45kg to 55kg.

In general, the physical development of the youth in the Gangnam area was better and the physical development of the youth in the Gyeonggi-do area was slightly behind of the Seoul area.

Depending on the grade, the difference of height or weight was analyzed, and the height for 1st class showed shorter than 154cm and 2nd class and 3rd class, it showed the range of 158cm to 162cm. The weight was surveyed for 1st class ranged from 40kg to 45kg, and 2nd class and 3rd class ranged from 45kg to

50kg. Through the analysis, we learned that the physical development was improved as students went up to the higher grade.

From the 557 subjects for survey, 86.7% (483 students) experienced the menarche, and 13.3% (74 students) had yet to experience the menarche. The range of age for menarche was surveyed for 9–15 years of age, and the average age was 12.38 years of age, with the median of 12 years of age, and the standard deviation of 1.02 years of age. Following the range of the physical development, the ratio of period commencement was sought. And, as the height to be taller and weight to be heavier, the ratio of period commencement was higher that the period is started earlier as the physical development gets better.

**2. Satisfaction of Breast Type and Brassier Wearing Purpose and Function**

1) Evaluation of Breast Type and Satisfaction

From the 557 subject students of survey, 96.9% (540 students) wear the brassiere and only 3.1% (17 students) does not wear brassiere. The reasons for not wearing the brassiere are the breast is not matured for 70.6% (12 students), inconvenience of wearing for 23.5% (4 students), and other for 5.9% (1 student).

On the inquiry on the degree of protrusion of the breast, 59.1% (329 students) thinks normal, 18.1% (101 students) thinks a slight protrusion, 15.3% (85 students) thinks slightly flat, and 3.8% (21 students) thinks very flat or much protruded. Through this, about 80% of the early adolescent female students think that their breast is protruded for normal or more.

For the size of the breast, they think of their breast as normal for 57.3% (319 students), slightly small for 19.4%(108 students), slightly large for 14.7% (82 students), very small for 5.4%(30 students), and very large for 3.2% (18 students) that, unlike the level of protrusion, approximately 80% of the subjects think that the size of their breasts to be smaller.

For the degree of satisfaction on the breast, the normal was for 59.4% (331 students), slightly dissatisfied for 21.7% (121 students), very dissatisfied for 8.6% (48 students), slightly satisfied for 7.2% (40 students), and very satisfied for 3.1% (17 students) that the case of satisfaction was only approximately 10% that the degree of satisfaction was shown to be less than normal degree.

Analyzing the correlation on the level of protrusion and the size of breast, and degree of satisfaction on breast, each had the showing of correlation, and in the case of evaluating breast as protruded, they generally think that the breast is large with the higher degree of satisfaction.

<Table 1> Age, Grade, Height, Weight of the subjects for survey

	age	grade	height	weight
N	557	557	557	557
Average	13.85458	2.044883	159.5925	48.17953
The median	14	2	160	48
The mode	14	3	160	50
The lowest	11	1	139	31
The greatest	16	3	172	78

<Table 2> Correlation of protrusion of breast, size of breast, and satisfaction of breast

	Degree of protrusion	Size of breast	Degree of satisfaction of breast
Level of protrusion	1		
Size of breast	.762***	1	
Degree of satisfaction of breast	.229***	.323***	1

\*\*\* P< 0.001

<Table 3> degree of satisfaction of breast for each grade

Classification	Degree of satisfaction of breast					Overall	
	Very unsatisfactory	Slightly unsatisfactory	Normal	Slightly satisfactory	Very satisfactory		
class	1st class	10(5.7)	29(16.5)	130(73.9)	6(3.4)	1(0.6)	176(100.0)
	2nd class	5(4.8)	29(27.6)	59(56.2)	7(6.7)	5(4.8)	105(100.0)
	3rd class	27(12.5)	45(20.8)	113(52.3)	23(10.6)	8(3.7)	216(100.0)
Total	42(8.5)	103(20.7)	302(60.8)	36(7.2)	14(2.8)	497(100.0)	

As the result of surveying on the degree of satisfaction for each school class, 3rd class would have higher ratio of Normal or Slightly dissatisfaction <Table 3>.

In addition, as the result of looking at the degree of satisfaction on breast for each region, for the case of the Gangnam area, it showed the sequence of Normal > slightly not-satisfied > very unsatisfied while the Gangnam area and the Gyeonggi-do area showed the sequence of normal > slightly not satisfied > slightly satisfied that there was a noticeable difference. This indicates that the female students in Gyeonggi-do and Gangnam have higher degree of satisfaction than the female students in the Gangbuk area.

As a result of self-evaluation on the breast size for each region, the adolescent female

students in the Gangbuk area, they feel they are slightly large on the breast size while the students in the Gyeonggi-do and Gangnam area think that they are slightly small <Table 4>.

As the result of looking at the difference in the level of protrusion of breast, brassiere size, and degree of satisfaction on breast following the physical development, namely, the height or weight, there was a noticeable difference on the physical development, level of protrusion of the breast or size of breast, but there was no noticeable difference in between the relationship on the breast. Namely, as the body develops more, they think that the breast gets more protruded while the size of breast gets larger <Table 5>.

As the age to wear the brassiere is sooner, the breast is protruded more and the size of

the breast was larger when evaluating the level of protrusion and the size of breast. However,

the degree of satisfaction of breast was not noticeable to the age to wear the brassiere <Table 6>.

<Table 4> Self-evaluation on the size of breast for each region

Classification		breast size					Overall
		Very lean	Slightly lean	Normal	Slightly glamorous	Very glamorous	
Classification of each region	Gangbuk	12(5.3)	37(16.2)	132(57.9)	38(16.7)	9(3.9)	228(100.0)
	Gangnam	4(3.0)	27(20.1)	73(54.5)	25(18.7)	5(3.7)	134(100.0)
	Gyeonggi-do	4(3.0)	28(20.7)	91(67.4)	10(7.4)	2(1.5)	135(100.0)
Overall		20(4.0)	92(18.5)	296(59.6)	73(14.7)	16(3.2)	497(100.0)

<Table 5> Correlation of physical development, level of protrusion of breast, and breast size

		Sum of squares	Degree of freedom	Average square	F
Level of protrusion	Inter-group	20.584	4	5.146	9.369***
	Intra-group	270.225	492	0.549	
	Total	290.809	496		
Breast size	Inter-group	20.259	4	5.065	8.674***
	Intra-group	287.274	492	0.584	
	Total	307.533	496		

\*\*\* P<0.001

<Table 6> Relationship of brassiere wearing age, level of protrusion of the breast, and breast size

Classification		Sum of squares	Degree of freedom	Average square	F
Level of protrusion	Inter-group	14.142	7	2.020	3.554**
	Intra-group	269.468	474	.568	
	Total	283.610	481		
Breast size	Inter-group	14.390	7	2.056	3.412**
	Intra-group	285.536	474	.602	
	Total	299.925	481		

\*\* P< 0.01

2) Purpose of Wearing the Brassiere and Its Functions

(1) Purpose of wearing the brassiere

From the subjects for survey, the students who wear brassiere, 96.9% (540 students), had the survey on the beginning time of brassiere to show that they began to wear the brassiere to wear at 12 years of age to 13 years of age. The time of wearing the brassiere is 24 hours for 67.4% (364 students), waking up to sleeping time for 21.1% (114 students), only when outing for 9.4% (51 students), only during the time of period for 0.6% (3 students), and others for 1.5% (8 students) that may female students wear the brassiere for a long period of time.

As a result of looking at the time to wearing the brassiere and the degree of physical development, the height and the brassiere wearing time are related that, if the height is large, starting brassiere wearing was relatively fast Table 8. In addition, it has the correlation with the period beginning age that, as the brassiere wearing time gets earlier, the period

beginning time gets earlier as well. As presented by F. Philip Rice<sup>3)</sup> the menarche occurs within 1-2 years after the breast development.

As the result of surveying the purpose of wearing the brassiere by the adolescent girl students, it was in the order of prevent the sagging or opening of breast for 24.6% (333 students), make the breast in even shape for 21.8% (296 students), make the breast in even shape and make the clothing more beautiful for 19.3% (262 students).

It is showed that the purpose of wearing the brassiere by school year, as the school year increases, is to enhance the body balance or make the breasts look glamorous. The factors to induce the wearing of brassiere are to heighten the body balance and make the body shape look good, and to make the breast look glamorous and make the breast look in even shape.

(2) Function of brassiere

For the functions of the brassiere, the early adolescent female students responded in the

<Table 7> Correlation of height and time of wearing the brassiere

	Height	Time of wearing
Height	1	.147**
Time of wearing	.147**	1

\*\* P< 0.01

<Table 8> Correlation of brassiere wearing age and period beginning age

	Menarche	Time of wearing
Menarche	1	-.228**
Time of wearing	-.228**	1

\*\* P< 0.01



order of functions for prevent the shaking of breast, making beautiful body shape, hide the nipples and others. This is slightly different from the purpose of wearing the brassiere that the purpose of wearing the brassiere is to prevent the sagging or opening of breasts, make the breast in even shape, and heighten the body balance that the second respond was shown in the third factor in the purpose of wearing it. In addition, the prevent the shaking of breast was the most frequent one in the function, but it was the fourth in the purpose of wearing that there was a difference in the purpose of wearing and functions.

As a result of looking into the difference of thinking on the functions of brassiere for each school class, as the school class increases and the breast to develop, it had not only the function to cover, but also to make the body more beautiful in its role for brassiere functions Table 9 and Table 10.

As a result of analyzing the difference on the functions of the brassiere for each region, there was a difference for each region in all functions other than the function to tighten and support the breast. For the female students in the Gangbuk area, the function to make balanced and beautiful shape, for the

**<Table 9> Purpose of wearing brassiere for each class**

(Average(standard difference))

Purpose of wearing	School class			F-value
	1st class	2nd class	3rd class	
1. Heighten the body balance	.42(.495)	.41(.494)	.55(.499)	*
2. Make the breast look glamorous	.06(.245)	.11(.318)	.16(.365)	**
3. Prevent the sagging or opening of breast	.61(.489)	.56(.498)	.60(.491)	
4. Make the breast in even shape	.52(.501)	.52(.502)	.55(.499)	
5. Prevent the shaking of breast	.41(.492)	.40(.491)	.31(.465)	
6. Hide the nipples and others	.34(.476)	.37(.485)	.33(.472)	
7. Others	.02(.139)	.01(.090)	.00(.000)	

\*\*P <0.01 \* P < 0.05

**<Table 10> Difference on brassiere function of each class**

Function	School class			F-value
	1st class	2nd class	3rd class	
To hide nipples and others	.42(.495)	.27(.448)	.29(.456)	**
To make balanced and beautiful body	.29(.455)	.38(.487)	.42(.495)	*
To prevent the shaking of breasts	.50(.501)	.46(.500)	.41(.493)	
To make the breasts look glamorous	.08(.277)	.15(.362)	.11(.318)	
To tighten and support the breasts	.31(.463)	.31(.466)	.35(.479)	
Other functions	.05(.226)	.03(.177)	.03(.160)	

\*\* P< 0.01 \* P< 0.05

<Table 11> Function of brassiere for Region

Function	Region			F-value
	Gangbuk	Gangnam	Gyeonggi-do	
To hide nipples and others	.38(.487)	.22(.417)	.39(.490)	**
To make balanced and beautiful body	.44(.497)	.30(.461)	.32(.466)	**
To prevent the shaking of breasts	.39(.489)	.50(.501)	.49(.502)	*
To make the breasts look glamorous	.07(.260)	.22(.413)	.05(.224)	**
To tighten and support the breasts	.36(.482)	.30(.461)	.30(.461)	
Other functions	.05(.221)	.01(.076)	.05(.224)	*

\*\* P< 0.01 \* P< 0.05

Gangnam areas, the function to make the breast look large, and for the Gyeonggi-do area, the function to hide the nipple and the function to prevent the shaking of the breast <Table 11>.

### 3. Degree of Satisfaction of brassiere

#### 1) Degree of Satisfaction when Wearing brassiere

The degree of satisfaction on brassiere that the subjects currently wear is divided into 16 categories in tightening of shoulder line, support the lower breast to upward, feeling of gathering the breast to the middle, feeling on front shape of changes when wearing the bra, feeling on side shape of changes when wearing the bra, location attached with shoulder line, the breast shape is erected, arrange the lower breast area, feeling on changed breast shape, sense of wearing on the front middle part, sense of wearing on the side wings, rear finishing method, size of bra cup, shape of bra cup, overall design, and overall sense of wearing, and mostly subjects

have the normal range of satisfaction. However, for feeling of gathering the breast to the middle and rear finishing method of brassiere, it was surveyed to have the degree of satisfaction that is lower than the other categories.

As a result of looking into the degree of satisfaction in relation to the development of the breast, size of the breast and satisfaction on the breast, when wearing brassiere, each of the categories has some noticeable difference. In addition, the degree of satisfaction on the breast has the noticeable difference in terms of support the lower breast to upward, feeling of gathering the breast to the middle, rear finishing method, feeling on changed breast shape, size of bra cup, and shape of bra cup.

#### 2) Size of brassiere cup, satisfaction and recognition on the brassiere size

As a result of inquiring the degree of satisfaction on the brassiere cup size that is currently worn by the subjects, the responses had the sequence of appropriate for 76.3% (425 students), large for 9.7% (54 students),

small for 8.6% (48 students), others for 2.5% (14 students), very large for 1.8% (10 students), and very small for 1.1% (6 students). However, as a result on looking into the degree of recognition on the cup size of the adolescent girl students, the case of roughly knowing but not in exact size was 43.3% (241 students) and not knowing well for 37.9% (211 students) that most do not know the brassiere cup size that the responses were made without knowing if the brassiere cup size that they currently worn is actually the satisfied size or not.

As the result of looking into the degree of recognition on the breast size and the brassiere

cup size, the subjects think to have larger brassiere cup size as the breast size gets larger.

Looking into the difference of the degree of recognition on the breast and the brassiere cup size, the early adolescent female students who have taller height, they think the brassiere cup size has to be larger as well that there is a noticeable difference on the physical development and the brassiere cup size. Namely, as the body gets developed, they think the size of breast has to be larger with the brassiere cup size to be larger as well <Table 13>, <Table 14>, and <Table 15>.

**<Table 12> Relationship of the degree of satisfaction on body and the degree of satisfaction on brassiere wearing**

Categories of degree of satisfaction in wearing the brassiere	Level of protrusion	Breast size	Degree of satisfaction of brassiere
Tightening of shoulder line	.096	.082	.028
Support the lower breasts to upward	.133**	.076	.093*
Feeling of gathering the breasts to the middle	.095*	.086*	.111**
Feeling on front shape of changes when wearing the bra	.128**	.101*	.055
Feeling on side shape of changes when wearing the bra	.136**	.095*	.116**
Location attached with shoulder line	.133**	.089*	.063
Erected breast shape	.076	.074	.038
Arrange the lower breast area	.044	.008	.060
Feeling on changed breast shape	.079	.066	.086*
Sense of wearing on the front middle part	.093*	.068	.031
Sense of wearing on the side wings	.101*	.035	.024
Rear finishing method (hook wearing method, front look.)	.058	.050	.046
Size of bra cup	.121**	.093*	.089*
Shape of bra cup	.112**	.107*	.099*
Overall design	.086*	.058	.026
Overall sense of wearing	.105*	.083*	.054

\*\* P< 0.01 \* P< 0.05

<Table 13> Correlation of the degree of recognition of the breast size and the adolescent time

	Cup size	Breast size
Brassiere cup size	1	-.107*
Breast size	-.107*	1

\* P< 0.05

<Table 14> Correlation of the degree of recognition for the height and the brassiere cup size

	Height	Size of Cup
Height	1	-.177**
Brassiere cup size	-.177**	1

\*\* P< 0.01

<Table 15> Correlation of the degree of recognition of the weight and the brassiere cup size

	Weight	Brassiere cup size
Weight	1	-.144**
Brassiere cup size	-.144**	1

\*\* P< 0.01

<Table 16> Correlation of the degree of recognition on the age and the brassiere cup size

	Degree of recognition of cup size	Age
Degree of recognition of cup size	1	-.121**
Age	-.121**	1

\*\* P< 0.01

<Table 17> Correlation of the degree of recognition and satisfaction on the brassiere cup size

	Cup size	Degree of recognition of cup size
Cup size	1	.196***
Degree of recognition of cup size	.196***	1

\*\* P< 0.01

Most of the early adolescent female students do not know the brassiere cup size sold on the market that. In the event of knowing the cup size more accurately, the degree of satisfaction on the cup size increases that it showed how important it is to select the brassiere that fits to the body size.

For the question of "Are you able to find your desired bra size when purchasing brassiere," the answer was shown to be able to find for 46.1% (257 students), not able for 44.2% (246 students), and others for 9.7% (54 students). About a half of the students has difficulty in finding the desired brassiere size. The reason is that the accurate brassiere size is not known for 66.1% (170 students), not fit well with the brassiere size on the market for 16.3% (42 students), the brassiere size is not diversified enough for

12.5% (32 students), and others for 5.1% (13 students). For the early adolescent female students, the subjects did not know the body size and the brassiere size well. This was even more so when the student does not purchase the brassiere. As a result of survey on who purchases the brassiere, 73.4% (409 students) responded that mother purchases for subjects and only 13.8% (77 students) purchase the brassiere herself.

As a result of looking into the results from the various physical development with the noticeable difference on the brassiere cup size for different purchaser of the brassiere, in the event of having a great physical development on height and weight, the degree of recognition on the brassiere cup size or brassiere size is high with less dependency on mother in purchasing the brassiere.

**<Table 18> Relationship between height, brassiere cup size, degree of recognition on cup size, and purchaser**

Factors		Sum of squares	Degree of freedom	Average square	F
Brassiere cup size	Inter-group	10.049	4	2.512	4.943**
	Intra-group	280.544	552	.508	
	Total	290.592	556		
Degree of recognition on cup size	Inter-group	8.638	4	2.160	3.919**
	Intra-group	304.155	552	.551	
	Total	312.794	556		
Purchaser of brassiere	Inter-group	4.927	4	1.232	2.605*
	Intra-group	260.997	552	.473	
	Total	265.925	556		

\*\* P< 0.01 \* P< 0.05

#### 4. Preference of brassiere

##### 1) The preference in brassiere brand and price range

Looking into the brand to prefer, the popular brands for brassiere is ranked in the order of VENUS, VIVIEN, and Body Guard, and this seems to be related to the brand recognition. As the result of the survey for preference brand, for the Gangnam area, Calvin Klein, Triumph and other license brands have slightly higher brand preference that there was a difference in preferred brand depending on the economic situation.<Table 20>

As a result of finding out the preferred price range of the brassiere on the market, 10,000 won to 30,000 won range was for 49.0%

(273 students) and 10,000 won or less was for 23.2% (129 students) that the subjects generally prefer the affordable price range.

For the preferred design, the subjects generally choose the simple design for 53.0% (295 students), cuddly design for 28.9% (161 students) for their age, rather than the adult like designs.

For the brassiere type preferred by the adolescent girl students, the round-type for 49.0% (273 students) was the top, followed by sports-type and mold-type in the sequence. In the case of the adolescent female students, it is time to make the development of breast continuously that the style needs to have no burden on the breast but to support it, and the round-type or sports-type do not interfere with the activities but to feel the comfort for adolescent female students that it is preferred by the subjects.

<Table 19> Relationship between weight, brassiere cup size, degree of recognition on brassiere size, size and purchaser

Factors		Sum of squares	Degree of freedom	Average square	F
Brassiere cup size	Inter-group	7.945	4	1.986	3.879**
	Intra-group	282.647	552	.512	
	Total	290.592	556		
Degree of recognition of cup size	Inter-group	8.992	4	2.248	4.085**
	Intra-group	303.801	552	.550	
	Total	312.794	556		
Discovery of size	Inter-group	4.480	4	1.120	2.696*
	Intra-group	229.337	552	.415	
	Total	233.817	556		
Purchaser	Inter-group	4.254	4	1.064	2.244*
	Intra-group	261.670	552	.474	
	Total	265.925	556		
Degree of recognition of size	Inter-group	1.212	4	.303	1.472*
	Intra-group	113.671	552	.206	
	Total	114.883	556		

\*\* P< 0.01 \* P< 0.05

<Table 20> Brand preference

Preferred brand	Frequency (students)	Percentage (%)	Case
Solb	37	20.3	33.7
Impression	22	22.3	36.6
Yes	59	27.8	45.6
Hunt Inner-wear	32	6.8	11.2
The Day Underwear	43	20.1	33.0
Iklim	37	2.3	3.8
Venus	277	26.2	50.7
Vivien	194	18.4	35.5
James Dean	37	3.5	6.8
Body Guard	111	10.5	20.3
Calvin Klein	59	5.6	10.8
Triumph	20	1.9	3.7
Eblin	21	2.0	3.8
Others	108	10.2	19.8
Total	1057	100.0	193.6

The preferred brassiere design type also has difference depending on the region that the Gangnam and Gangnam areas preferred the round-type style while the Gyeonggi-do area preferred the sports-type style. This also showed the difference depending on the weight that the sports-type preferred on 40-45kg the most and the mold-type, band-type, and round-type are preferred from 45-50kg. For less than 40kg, 40-45kg, and 45-50kg, they preferred the round-type and sports-type while 50-55kg and 55-60kg preferred the round-type and mold-type. The height is shown to have no relations with the brassiere type.

#### IV. Conclusion and Proposition

This study examines the wearing of brassiere by the youth targeting the girl students of 12 to 16 years of age when the

stage of physical development begins. The following conclusion and proposition are made on the research outcome to help develop quality brassieres with good functionality and a good sense of fitting, which allow girl students to have balanced breasts in line with their body shape.

1. In between the protrusion and size of breast, and the degree of satisfaction on the breast, there has to be a correlation. In the event that the assessment is made for breasts to have protrusion, the breasts are considered large with higher degree of satisfaction. As the school year increases, and for the students in Gangnam and Gyeonggi-do areas, the degree of satisfaction with the breasts is shown to be higher than the students in the Gangbuk area.

2. The purpose of wearing the brassiere is shown in the order of 'preventing the sagging or opening of breast' for 24.6% (333

students), 'making the breast in even shape' for 21.8% (296 students), and 'heightening the body balance and make the garment look beautiful for 19.3% (262 students). As the school year increases, the more students wear brassiere to heighten the body balance or make the breasts look glamorous.

3. The students answer that the functions of brassiere are in the order of preventing the breast from shaking, making beautiful shape, hiding the nipples and others. As the school class increases and their breasts are more developing, it is shown that such function of making body line look good is of significance, not just simply covering their bust.

4. For most female students in early youth, as the school class increases, the degree of recognition on the cup size begins to be clearer. In addition, in the event of accurately knowing the cup size, the degree of satisfaction on the brassiere cup size was shown to increase as well. It shows how important it is to select the right brassiere that fits to the body.

5. For the degree of recognition on brassiere size by school class, the second class students and the students in the Gangnam area know about their brassiere size better than the first class students and the students in the Gangbuk area, respectively.

6. In regard to the color of brassiere, the early adolescent females preferred overwhelmingly white with 56.9% (317 students), followed by pink, and skin color. For the preferred material, cotton was the highest with 63.6% (354 students). They preferred cotton because it does not stimulate their tender skin. For the brassiere type, they preferred round-type with 49.0% (273 students), followed by sports-type and mold-type. They also preferred such style

that is able to support their breasts and does not give much pressure on them since their breasts continue to develop.

After surveying the girl students on the wearing and level of protrusion on brassiere, it is found that they have lack of recognition on their appropriate size. This was particularly true for the students in lower grade. In addition, even though it is high time for their breasts to develop, it is expected for them to have troubles in developing their breasts by wearing the brassiere that has the same functions as adults. Therefore, it is necessary to develop such brassieres that fit to the physical characteristics of the youth so that girl students can wear the brassiere appropriate to their body. It is believed that girl students need a proper education on selecting their brassiere appropriate to their size and type at school.

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