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ALLENE TYLER

THE SIZING AND DESIGN FOR
PHYSICAL EDUCATION UNIFORMS

by

Allene Tyler

A Thesis Submitted to
The faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
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APPROVAL SHEET

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The purpose of this study was twofold. First to investigate the sizing of physical education uniforms and secondly, to develop a costume which would fit a wider range of sizes. Specifically, the problem was: (1) to compare the measurements of a sample of seventh grade, tenth grade, and college freshmen girls with those of three companies manufacturing uniforms and, (2) to find out how well the required uniform was liked.

The sample consisted of 129 girls in the seventh grade and 131 girls in the tenth grade who attended school in Charlotte, North Carolina. The college freshmen sample consisted of 144 girls who attended The University of North Carolina at Greensboro.

Body measurements of bust, waist, and hip were taken of each girl, averaged, and compared to each of three company standards, to the government standard and to the pattern standard. Back waist measurement was taken and compared to the government standard and the pattern standard.

Using a questionnaire, each girl was asked her opinion of the physical education uniform she was required to wear. She was also asked to give any suggestions for changes in the uniform.

From the data of the sample, a recommended sizing chart was constructed which more nearly conformed to the sample. A recommended design for a uniform which would be practical and appropriate for physical education classes was sketched.

Within the limitations of the study the following conclusions were made:

1. The sizing charts used by the three uniform manufacturing companies were not comparable to the measurements of the sample.

2. A majority of the seventh grade and tenth grade girls would prefer another type of uniform other than the one piece suit they were required to wear.

3. The college freshmen liked the one piece tennis type style of uniform they were required to wear, but preferred a change in the sleeve design.

From the results of the study the following recommendations were made:

1. That the uniform companies make a study of the measurements of the present day secondary school and college girl and use the findings to adjust the company sizing charts.

2. More attention be paid to the back waist length measurement when sizing a uniform.

3. A study of uniform styling be made to find a basic design that would be suitable for physical education activities.

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INTRODUCTION

of women in 1881, and it is the way to the development of practical clothing for physical activities. From that time the process has been gradually changing until women have been freed from the restrictive bounds of fashion. By 1910, (ii) the blouse and skirt had been adopted by many schools as the uniform for physical activities. Today, uniform styles are many and varied.

As early as 1933 a committee sponsored by the Women's Athletic Section of the American Physical Education Association formulated the "Standards in Physical Education Costumes for Girls and Women." The report stated:

The costume should conform to the fashions of the day. They should be feminine in style, and should be becoming to the wearer. It is equally important that they fit the wearer, that they be comfortable, hygienic and adapted to the purpose which they must serve. (16:83)

The report went on to say:

It is well to bear in mind that we are not to be regarded as a fashion accessory in dress but as a person in dress. It is well to bear in mind that we are not to be regarded as a fashion accessory in dress but as a person in dress. It is well to bear in mind that we are not to be regarded as a fashion accessory in dress but as a person in dress. (16:83)

Today there are companies manufacturing uniforms for physical education activities. The companies offer a variety of styles and colors. Periodically new styles are

CHAPTER I

INTRODUCTION

When Amelia Jenks Bloomer began to champion dress reform for women in 1851, (8, 11) she opened the way to the development of practical clothing for physical activities. From then to the present time the styles have gradually changed until women have been freed from the restricting bounds of clothing. By 1910, (11) the bloomer and middie had been adopted by many schools as the uniform for physical activities. Today, uniform styles are many and varied.

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The costume should conform to the fashions of the day, they should be feminine in style, and should be becoming to the wearer. It is equally important that they fit the wearer, that they be comfortable, hygienic and adapted to the purpose which they must serve. (16:83)

The report went on to say:

It is well to bear in mind that we must keep pace with the changing world in gymnasium costumes as well as in all phases of life. Experimentation must go on and our costumes must be changed as new and better styles are discovered. (16:83)

Today there are companies devoted exclusively to manufacturing physical education uniforms. The companies offer a variety of styles and colors. Periodically new styles of gymwear are

introduced. The purpose of the changes has been to find a style which better suits the use for which it was designed - and to please the wearer. Even with the changes that have been made a quandary still exists as to the best style and the best fit as it relates to activity and appearance. Because of difficulty and dissatisfaction with the fitting of women's physical education uniforms this study was undertaken.

CHAPTER II

STATEMENT OF THE PURPOSE

The purpose of this study was twofold. First to investigate the sizing of physical education uniforms and secondly, to develop a costume which would fit a wider range of sizes.

Specifically then the problem was in two parts: (1) To compare the measurements used by companies manufacturing physical education uniforms with the measurements of the present day girl in the secondary school and college. (The government standards for sizing clothing and the sizing charts of pattern companies were used also for comparison.) (2) To determine how students felt about the uniform they were required to wear.

LIMITATIONS

This study had the following limitations: (1) Only three measurements, bust, waist, and hips were used since they were the measurements given by the companies in their catalogues. The uniform companies considered their sizing procedure confidential. Therefore, further information was not available. (2) The second part of the problem, to determine how students felt about the uniform, was based on the two styles worn by the sample group.

CHAPTER III

REVIEW OF LITERATURE

In the review of literature the studies pertaining to gymnasium wear were meager. Several studies have been done on the desirability of having well-fitting clothes and the resulting feeling of well-being.

In 1918, Dearborn (12) stressed the importance of freedom for bodily action and that this action included not only physical body movements but higher efficiency of the mind since they are both part of the same thing - a personality who wears clothes.

He went on to say that the sensations of the interior of the body, "coenesthesia," and the muscle-joint sense, kinesthesia, are important because they will give sensations to the brain resulting in strains and restraints and movements throughout the body. If these sensations are restricted, the individual can be affected in activity and attitude.

In the science of clothing those coenesthetic and kinesthetic data are of preeminent importance. Unless these movements are unrestrained and free, unless these conscious and subconscious sensations are kept from being restricted and therefore made unpleasant, the individual is not comfortable and cannot be fully efficient or consciously 'happy,' but there is more or less conscious lack of freedom and of satisfaction. (12:13)

If clothing fits, it interferes little with our life-activities, and 'fit' means fit the one particular body that it is made and intended for. (12:13)

Dearborn also suggested the essential criteria for fitness were, first,

a uniform snugness with a reasonable amount of looseness for the organism as a conscious and living and variously active 'machine' with vital and mental processes to carry on within the clothes, (12:13)

and second, "fitness to each unique individually." (12:13)

If good fit is included in the definition of "well-dressed" then the fit of clothing can help in discipline, desire to participate, and extent and kind of participation.

Ryan's (15) study revealed that if her subjects felt well dressed they might relax and forget about their clothes, be more talkative and lively. But with dissatisfaction of clothing they felt ill at ease, conspicuous, tried to keep from the center of the group, might be quieter and feel self-conscious. Satisfaction with appearance might make them self-confident, making them forget their appearance and think of other things, or they might get more enjoyment out of the occasion.

According to Hurlock:

A well dressed child is more self-confident, better mannered, and less rowdy than a poorly dressed one. This is increasingly true as the child grows older. The adolescent and the adult find, as does the child, that clothing has a marked effect on their behavior and that it has a definite influence on their outlook on life. (5:512-513)

Several studies indicated that clothes could hamper or help a person. Flaccus (9) found that the influence of clothing is felt in our physical, mental and social sense of well being. Silverman's (26) study revealed that feelings of self-confidence

can be brought forth by proper clothing, but that feelings of inadequacy and self-consciousness result from clothing which is not satisfactory to the individual. In Warden's (27) study all the girls believed clothes helped in the feeling of competence. Growing up may be made easier or harder by the clothes of the child says Read. (14) Morton stated that "clothes help make us self-confident, self-respecting, jolly, free or they make us self-conscious, shy, sensitive, restrained." (13:535)

Since the physical education uniform is a garment that must serve during physical activity, the purposes should be to help, not hinder, free not restrain the participant physically and mentally.

Concerning physical education uniforms in particular, Hughes and French (4) consider the purposes to be freedom of motion because of suitability for activity, better grooming, feelings of belonging because of sameness of dress, and pride in appearance.

Bucher (2) feels the uniform is more comfortable and allows for freedom of movement, is an aid to morale, and provides for safety in performance of activity.

Because of the sensitiveness of adolescents and the desire to be accepted, the uniform helps satisfy emotional needs according to Weiner. (28)

Aldrich (11) found that the coming into use of the colored wash suits for uniformity in physical education classes helped advance the morale of the classes as well as the pride of the students.

One uniform manufacturing company, the E. R. Moore Company, (21) feels that uniformity helps with discipline, prevents distractions, increases morale, eliminates competition in dress, and promotes enthusiasm and efficiency because of pride in group appearance.

There should be a standard costume in physical education classes in order to prevent the use of expensive or cheap and inappropriate attire according to Lee. (7) It should be a conservative style.

Williams (10) also feels that the physical education uniform is desirable when students dress for physical education instruction.

If clothes affect the person and physical education uniforms are desirable, then the selection of the uniform would be an important matter. To select a uniform that would have the right clothing effects upon the wearer and carry out the right purposes of physical education dress uniformity, such features as safety, appearance, economy and comfort would need to be considered.

Lee (7) felt that comfort was a consideration in selecting the uniform. She stated:

Although the 1930 survey found the one-piece suit to be the most used by all groups there is at the present a trend in college toward the two-piece suit since it is better adapted to the mature figure of the older girl. (7:328)

She went on to recommend that, . . . 'sizes: Because of variation of physiological development costumes should not be ordered

by size alone but by short, medium and tall classification within each size." (7:351) No mention was made as to how short, medium and tall were determined.

Sizing garments can be a difficult task. Once sizes have been designated to particular measurements, the question arises as to when or how often the sizing charts should be revised. The federal government was concerned about the different sizing methods used in some garment industries and developed standards in 1958 that could be used for determining sizing charts. (25) The pattern company standards (19, 24) were developed from this plan. Before government standards were established the last major study concerning the sizing and measurements of the population, including the range from one year old to forty-one years and over, was the Pryor Width-Weight Tables (23) published in 1940. The insurance company tables are revised regularly, but the tables begin with either age 20 or 25. (6) The Baldwin-Wood tables (1, 3) show height, weight, and age of children from five years to nineteen years but do not show other body measurements.

According to Kalb and Hovde (6) in 1963, the following formula should be used to determine the correct measurements for women who are of normal weight for their age, height and build. However, they failed to state how they arrived at the formula.

To determine the correct measurements do as follows: take the height measurement first.

The bust should measure thirty inches plus the number of inches over five feet.

The hip measurement should be two inches more than the bust measurement.

The waist measurement should be eight inches less than the bust measurement.
(6:118)

The three uniform companies provide one set of sizes, that is, "Misses". Two of the companies (18, 20) also make children's uniforms and one (18) has a short, medium, tall range for the college girl. Two popular pattern companies (19,24) provide for different body types such as junior, misses, and half sizes. The government standard sizing (25) provides for four classifications of women and nine different body types. The government studied sizing and compiled standardization charts to help people identify their size and "to provide standard classifications, size designations and body measurements for consistent sizing of women's ready-to-wear apparel." (25:1)

The literature indicated that clothing affects a person, that physical education uniforms are desirable, and that sizing of a garment is an important consideration in the benefits derived from that garment.

Although there has been some work on sizing of clothing, perhaps more needs to be done in the area of the high school and college girl.

CHAPTER IV

PROCEDURE

SELECTION OF SUBJECTS

Physical education in the public school is found most often at the seventh and eighth grade level, at the tenth grade level, and in colleges at the freshmen and/or sophomore year. Hence the gymnasium uniform is usually purchased at the beginning of the seventh grade, tenth grade, and the freshmen year of college. For this reason the three age groups were selected as subjects for this study. The subjects for the study were attending a junior or senior high school in Charlotte, North Carolina. The one hundred and twenty-nine seventh grade girls were in the required physical education classes. The one hundred and thirty-one tenth grade girls were also in the required physical education program. The college freshmen were students at The University of North Carolina at Greensboro who lived in two freshmen dormitories. There were one hundred and forty-four college freshmen included in the study.

COLLECTION OF DATA

The measurements recorded were body measurements taken when the subjects were clothed in bra and underpants. Each girl was taken individually to be measured. A plastic, non-stretch tape measure was used for the body measurements. The hip

measurement for the sample was taken at the fullest part of the hips. Waist measurement was taken at the smallest part of the waist, and measurement for the bust was taken over the maximum curve. A fourth measurement was taken which is not used by the uniform companies in their sizing catalogues, but was used by the pattern companies. The measurement, back waist length, was measured from the seventh cervical vertebra to a string tied firmly around the girl's waist. Measurements were recorded as the nearest half inch above the actual measurement.

The measuring and reading were done by the writer. "Gym assistants" were used as recorders for the measurements of the seventh and tenth grade girls. Graduate assistants were used to record the college scores.

The three uniform manufacturing companies that were used have national distribution of their uniforms on the secondary school and college levels. For this study they will be known as Company A, Company B, and Company C. The chart published in each company's catalogue was used as that company's measurement standard. Comparisons were made with the three measurements used in the size charts - bust, waist, and hips.

The government standard sizing chart that was used was for "Misses' Body Measurements, Regular Height, Average Hip."

The pattern company standards used was the chart entitled "Misses and Women."

EVALUATION

Within each age group the measurements were averaged according to bust measurement. Bust measurements of half inches were used as the next higher whole number group. Then the measurements were averaged for every two bust sizes. This allowed for easier comparison with standards that used a two measure size, as 33-34, or that used every other measure for each size, as a 34 and a 36.

The whole sample was also averaged according to each bust measurement and by every two bust sizes.

Percentages were calculated for each age group sample and for the sample as a whole.

QUESTIONNAIRE

The questions were asked informally of each subject as she was measured. The questions were not always asked in the same order. Questions were reworded if they were not understood. The girls were encouraged to give suggestions or feelings about their gym suits even if the items were not specifically included in the questionnaire.

UNIFORMS WORN BY SUBJECTS

The uniform the seventh and tenth grade girls wore was a one piece white uniform with jamaica length pants, button down collar, and elastic back waist.

The college freshmen wore a white tennis-type suit with gored skirt and cap sleeves.

Except for those few tenth grade girls who had second hand uniforms, all of the subjects had bought new uniforms in the fall of 1965.

The first portion of this study was to investigate the fitting of physical education uniforms. The problem was to make a comparison between those of the wife making purchases 'regular' using charts and the actual measurements of a sample of seventh grade, tenth grade and college freshmen girls. Each sample was measured in each age range for analysis. The government standards and private standards were also subjected to each age range. Thus the sample as a whole was compared to the respective government standards, and private standards. In the comparison, when the measurements contained a fraction, the next highest whole number was used as the size. The last measurement was used as the point of reference for comparing the respective government standards, private standards, and the sample measurements.

For the second portion of determining how students felt about the uniform they were required to wear, the information taken from the questionnaire was tabulated and discussed in terms of the percentage answering.

DESCRIPTION OF SUBJECTS

Seventh Grade Sample

The range of sizes of Category A covered the range of the seventh grade sample.

CHAPTER V

ANALYSIS OF DATA

The first purpose of this study was to investigate the sizing of physical education uniforms. The problem was to make a comparison between three of the major uniform manufacturing companies' sizing charts and the actual measurements of a sample of seventh grade, tenth grade and college freshmen girls. Each company was compared to each age sample for analysis. The government standards and pattern standards were also compared to each age sample. Then the sample as a whole was compared to the companies, government standards, and pattern standards. In the comparison, when the measurements contained a fraction, the next highest whole number was used as the size. The bust measurement was used as the point of reference for comparing the companies, government standard, pattern standards, and the sample measurements.

For the second problem of determining how students felt about the uniform they were required to wear, the information taken from the questionnaire was tabulated and discussed in terms of the percentage answering.

COMPARISON OF COMPANY A

Seventh Grade Sample

The range of sizes of Company A covered the range of the seventh grade sample.

TABLE I
SEVENTH GRADE COMPARED WITH COMPANY A

Company size		Company A measurement	Sample measurement	Number in sample (N = 129)	Per cent of sample
10	Bust	27-28	27-28	10	8%
	Waist	22-23	22.7		
	Hips	32-33	30.1		
12	Bust	29-30	29-30	25	19%
	Waist	23-24	24		
	Hips	33-34	31.8		
14	Bust	31-32	31-32	44	34%
	Waist	25-26	24.4		
	Hips	35-36	32.9		
16	Bust	33-34	33-34	27	21%
	Waist	27-28	25.8		
	Hips	37-38	34.7		
18	Bust	35-36	35-36	14	11%
	Waist	29-30	27.6		
	Hips	39-40	36.9		
20	Bust	37-38	37-38	6	5%
	Waist	31-32	30.1		
	Hips	41-42	38.3		
22	Bust	39-40	39-40	3	2%
	Waist	33-34	33.2		
	Hips	43-44	40.5		

Waist. The waist measurements of the sample and the measurements of the company for sizes 10, 12, 14, 20, and 22 were comparable. The company measurements for sizes 16 and 18 were an inch larger than for the sample.

The company was comparable to the sample for 68 per cent of the sample. For 32 per cent of the sample the company was one inch larger in waist measurement.

Hips. The company hip measurements of sizes 14 through 22 were over two inches larger in each case than the sample. Sizes 10 and 12 were an inch larger than the sample measurement.

For 73 per cent of the sample the hip measurement was two inches larger for the company than for the sample. The company was one inch larger for 27 per cent of the sample.

Tenth Grade Sample

For the tenth grade girls, the size range of Company A did not include the larger girls of the sample.

Waist. The waist measurement for size 10 for the company was smaller than the sample by one-half inch. Size 12 sample measurement was comparable to the company measurement. Sizes 14 and 16 were an inch larger for the company than for the sample measurement. Sizes 18 and 20 were two inches larger in company measurement than the sample measurement. Size 22 was greater by five inches than the sample measurement.

One per cent of the sample waist measurement was larger than the company measurement, and 3 per cent of the sample was

TABLE II
TENTH GRADE COMPARED WITH COMPANY A

Company size		Company A measurement	Sample measurement	Number in sample (N = 131)	Per cent of sample
10	Bust	27-28	28	1	1%
	Waist	22-23	23.5		
	Hips	32-33	31.5		
12	Bust	29-30	29-30	4	3%
	Waist	23-24	22.8		
	Hips	33-34	32.4		
14	Bust	31-32	31-32	34	26%
	Waist	25-26	23.9		
	Hips	35-36	34.5		
16	Bust	33-34	33-34	57	44%
	Waist	27-28	25.3		
	Hips	37-38	35.8		
18	Bust	35-36	35-36	23	18%
	Waist	29-30	26.5		
	Hips	39-40	36.8		
20	Bust	37-38	37-38	9	7%
	Waist	31-32	29		
	Hips	41-42	39.1		
22	Bust	39-40	39-40	1	1%
	Waist	33-34	27.5		
	Hips	43-44	38.5		
			41-42	1	1%
			32.5		
			40		
			43-44	1	1%
			36		
			45		

comparable to the company. The company measurements were one to five inches larger than 96 per cent of the sample.

Hips. The company hip measurements were consistently larger than the sample varying from one-half inch for sizes 10, 12, and 14, to an inch for sizes 16 and 20, to two inches for size 18, and four inches for size 22.

Since the company was only one-half inch larger than the sample for three sizes, it was comparable to 30 per cent of the sample. For 70 per cent of the sample the company measurement was one to four inches larger than the sample measurement.

College Freshmen Sample

The college freshmen sample had a wider size range than the company offers.

Waist. In all sizes the waist measurements for the company were larger than the sample measurement - sizes 14 and 18 by one inch and sizes 16, 20, and 22 by two inches.

The waist measurements in all the cases were larger for the company than for the sample. The company was one inch larger for 46 per cent of the sample and two inches larger for 53 per cent of the sample.

Hips. The hip measurement was comparable for size 14, but there was a one to three inch increase in the other sizes of the company over the sample. The measurements for sizes 16, 18, and 20 were one inch larger by company measurement and size 22 was three inches larger by company measurement than by sample measurement.

TABLE III
COLLEGE FRESHMEN COMPARED WITH COMPANY A

Company size		Company A measurement	Sample measurement	Number in sample (N = 144)	Per cent of sample
10	Bust	27-28			
	Waist	22-23			
	Hips	32-33			
12	Bust	29-30			
	Waist	23-24			
	Hips	33-34			
14	Bust	31-32	31-32	24	17%
	Waist	25-26	23.8		
	Hips	35-36	34.6		
16	Bust	33-34	33-34	66	46%
	Waist	27-28	25		
	Hips	37-38	36		
18	Bust	35-36	35-36	42	29%
	Waist	29-30	27.4		
	Hips	39-40	37.3		
20	Bust	37-38	37-38	9	6%
	Waist	31-32	28.3		
	Hips	41-42	39.9		
22	Bust	39-40	39-40	2	1%
	Waist	33-34	30.3		
	Hips	43-44	39.8		
			43-44	1	1%
			34		
			43		

The company hip measurement was comparable for 17 per cent of the sample. For 82 per cent of the sample the company was one to three inches larger than the sample measurement.

COMPARISON OF COMPANY B

Seventh Grade Sample

The range of sizes of Company B did cover the range of sizes for the seventh grade sample.

Waist. The company waist sizes were larger from one to two inches than the sample measurement in all but the largest size, 22. Sizes 10, 12, 14, and 20 were an inch larger and sizes 16 and 18 were two inches larger for the company.

The sizes were larger by one to two inches than the sample for 98 per cent of the sample. For 2 per cent of the sample the measurements were comparable.

Hips. The hip measurements were larger for the company varying from one inch to five inches. Sizes 10 and 12 were one and three inches larger respectively, while sizes 14, 16, 18, and 20 were four inches larger. Size 22 was five inches larger for the company.

The company was one to five inches larger than the whole sample.

Tenth Grade Sample

Company B sizes did not extend enough to include the largest sizes of the tenth grade sample.

Waist. The waist measurement for size 10 corresponded with the sample, but sizes 12, 14, and 16 were two inches larger,

TABLE IV
SEVENTH GRADE COMPARED WITH COMPANY B

Company size		Company B measurement	Sample measurement	Number in sample (N = 129)	Per cent of sample
10	Bust	29	27-28	10	8%
	Waist	24	22.7		
	Hips	32	30.1		
12	Bust	30	29-30	25	19%
	Waist	25	24		
	Hips	35	31.8		
14	Bust	32	31-32	44	34%
	Waist	26	24.4		
	Hips	37	32.9		
16	Bust	34	33-34	27	21%
	Waist	28	25.8		
	Hips	39	34.7		
18	Bust	36	35-36	14	11%
	Waist	30	27.6		
	Hips	41	36.9		
20	Bust	38	37-38	6	5%
	Waist	32	30.1		
	Hips	43	38.3		
22	Bust	40	39-40	3	2%
	Waist	34	33.2		
	Hips	46	40.5		

TABLE V
TENTH GRADE COMPARED WITH COMPANY B

Company size		Company B measurement	Sample measurement	Number in sample (N = 131)	Per cent of sample
10	Bust	29	27-28	1	1%
	Waist	24	23.5		
	Hips	32	31.5		
12	Bust	30	29-30	4	3%
	Waist	25	22.8		
	Hips	35	32.4		
14	Bust	32	31-32	34	26%
	Waist	26	23.9		
	Hips	37	34.5		
16	Bust	34	33-34	57	44%
	Waist	28	25.3		
	Hips	39	35.8		
18	Bust	36	35-36	23	18%
	Waist	30	26.5		
	Hips	41	36.8		
20	Bust	38	37-38	9	7%
	Waist	32	29		
	Hips	43	39.1		
22	Bust	40	39-40	1	1%
	Waist	34	27.5		
	Hips	46	38.5		
			41-42	1	1%
			32.5		
			40		
			43-44	1	1%
			36		
			45		

sizes 18 and 20 three inches larger, and size 22 six inches larger than the sample.

For one per cent of the sample the company waist measurement was comparable. The company was two to three inches larger than 98 per cent of the sample, and six inches larger than one per cent of the sample.

Hips. The company size 10 hip measurement was comparable to the sample while sizes 12 and 14 were two inches larger, sizes 16 and 20 three inches larger, size 18 four inches larger and size 22 seven inches larger than the sample.

For one per cent of the sample the company hip measurement was comparable. For 80 per cent of the sample the company hip measurements were two to three inches larger than the sample measurement. The company was four to seven inches larger for 19 per cent of the sample.

College Freshmen Sample

The college freshmen sample included sizes not covered in Company B's size range.

Waist. The waist measurements of sizes 14 and 18 were two inches larger and sizes 16, 20, and 22 were three inches larger than the sample.

The company waist measurements were two to three inches larger for the whole sample.

Hips. The hip measurements used by the company were larger in all sizes - size 14 by two inches, size 16, 18, and 20 by three inches and size 22 by six inches.

TABLE VI
COLLEGE FRESHMEN COMPARED WITH COMPANY B

Company size		Company B measurement	Sample measurement	Number in sample (N = 144)	Per cent of sample
10	Bust	29			
	Waist	24			
	Hips	32			
12	Bust	30			
	Waist	25			
	Hips	35			
14	Bust	32	31-32	24	17%
	Waist	26	23.8		
	Hips	37	34.6		
16	Bust	34	33-34	66	46%
	Waist	28	25		
	Hips	39	36		
18	Bust	36	35-36	42	29%
	Waist	30	27.4		
	Hips	41	37.3		
20	Bust	38	37-38	9	6%
	Waist	32	28.3		
	Hips	43	39.9		
22	Bust	40	39-40	2	1%
	Waist	34	30.3		
	Hips	46	39.8		
			43-44	1	1%
			34		
			43		

For 98 per cent of the sample the hip measurements of the company were two to three inches larger than the sample. The hip measurement of the company was six inches larger than the sample for one per cent of the sample.

COMPARISON OF COMPANY C

This company had the widest range of sizes of the three companies and covered all the sizes in the sample for the seventh, tenth and college freshmen. Percentages will be over 100 because Company C uses overlapping measurements for sizes 6, 8, and 10.

Seventh Grade Sample

Waist. The waist measurements for sizes 4, 6, 8, 10, 16 and 18 are comparable to the sample, and sizes 12 and 14 are one inch larger than the sample.

The waist measurements were comparable for 95 per cent of the sample. The company measurements were one inch larger than the sample for 32 per cent of the sample.

Hips. Size 4 for the company hip measurement compares to the sample, but sizes 6 and 8 are one inch larger and the other five sizes are each two inches larger than the sample measurement.

For 8 per cent of the sample the hip measurements were comparable. The hip measurement of the company is one to two inches larger than 121 per cent of the sample.

TABLE VII
SEVENTH GRADE COMPARED WITH COMPANY C

Company size		Company C measurement	Sample measurement	Number in sample (N = 129)	Per cent* of sample
4	Bust	27-28	27-28	10	8%
	Waist	22-23	22.7		
	Hips	31-32	30.1		
6	Bust	29-30	29-30	25	19%
	Waist	23-24	24		
	Hips	33-34	31.8		
8	Bust	30-31	30-31	38	29%
	Waist	24-25	24.3		
	Hips	34-35	32.2		
10	Bust	31-32	31-32	44	34%
	Waist	25-26	24.4		
	Hips	35-36	32.9		
12	Bust	33-34	33-34	27	21%
	Waist	27-28	25.8		
	Hips	37-38	34.7		
14	Bust	35-36	35-36	14	11%
	Waist	29-30	27.6		
	Hips	39-40	36.9		
16	Bust	37-38	37-38	6	5%
	Waist	31-32	30.1		
	Hips	41-42	38.3		
18	Bust	39-40	39-40	3	2%
	Waist	33-34	33.2		
	Hips	43-44	40.5		
20	Bust	41-42			
	Waist	35-36			
	Hips	45-46			
22	Bust	43-44			
	Waist	37-38			
	Hips	47-48			

*Sizes 6, 8, and 10 have overlapping measurements. Hence percentage exceeds 100.

Tenth Grade Sample

Waist. The waist of sizes 6 and 8 were comparable whereas sizes 10, 12, and 22 of the company were one inch larger, sizes 14, 16 and 20 were two inches larger and size 18 was five inches larger than the sample measurements. Size 4 was smaller for the company than for the sample.

For one per cent of the sample the company was smaller than the sample. For 13 per cent of the sample the company measurements were comparable. The company measurements were one to two inches larger than the sample for 97 per cent of the sample, and five inches larger than one per cent of the sample.

Hips. The hip measurements were comparable in sizes 4, 6, 8, and 10 but sizes 12 and 16 were one inch larger, sizes 14 and 22 were two inches larger, size 18 was four inches larger and size 20 was five inches larger than the sample.

The company measurement was comparable for 40 per cent of the sample. The company was one to two inches larger for 70 per cent of the sample, and four to five inches larger for 2 per cent of the sample.

College Freshmen Sample

Waist. The company waist measurements were one inch larger for sizes 10 and 14, two inches larger for sizes 12, 16, 18 and three inches larger for size 22 than the sample.

The company waist measurements were one inch larger than 46 per cent, two inches larger than 53 per cent, and three inches larger than one per cent of the sample.

TABLE VIII
TENTH GRADE COMPARED WITH COMPANY C

Company size		Company C measurement	Sample measurement	Number in sample (N = 131)	Per cent * of sample
4	Bust	27-28	27-28	1	1%
	Waist	22-23	23.5		
	Hips	31-32	31.5		
6	Bust	29-30	29-30	4	3%
	Waist	23-24	22.8		
	Hips	33-34	32.4		
8	Bust	30-31	30-31	13	10%
	Waist	24-25	23.3		
	Hips	34-35	33.2		
10	Bust	31-32	31-32	34	26%
	Waist	25-26	23.9		
	Hips	35-36	34.5		
12	Bust	33-34	33-34	57	44%
	Waist	27-28	25.3		
	Hips	37-38	35.8		
14	Bust	35-36	35-36	23	18%
	Waist	29-30	26.5		
	Hips	39-40	36.8		
16	Bust	37-38	37-38	9	7%
	Waist	31-32	29		
	Hips	41-42	39.1		
18	Bust	39-40	39-40	1	1%
	Waist	33-34	27.5		
	Hips	43-44	38.5		
20	Bust	41-42	41-42	1	1%
	Waist	35-36	32.5		
	Hips	45-46	40		
22	Bust	43-44	43-44	1	1%
	Waist	37-38	36		
	Hips	47-48	45		

*Sizes 6, 8, and 10 have overlapping measurements. Hence percentage exceeds 100.

TABLE IX
COLLEGE FRESHMEN COMPARED WITH COMPANY C

Company size		Company C measurement	Sample measurement	Number in sample (N = 144)	Per cent of sample
4	Bust	27-28			
	Waist	22-23			
	Hips	31-32			
6	Bust	29-30			
	Waist	23-24			
	Hips	33-34			
8	Bust	30-31			
	Waist	24-25			
	Hips	34-35			
10	Bust	31-32	31-32	24	17%
	Waist	25-26	23.8		
	Hips	35-36	34.6		
12	Bust	33-34	33-34	66	46%
	Waist	27-28	25		
	Hips	37-38	36		
14	Bust	35-36	35-36	42	29%
	Waist	29-30	27.4		
	Hips	39-40	37.3		
16	Bust	37-38	37-38	9	6%
	Waist	31-32	28.3		
	Hips	41-42	39.9		
18	Bust	39-40	39-40	2	1%
	Waist	33-34	30.3		
	Hips	43-44	39.8		
20	Bust	41-42			
	Waist	35-36			
	Hips	45-46			
22	Bust	43-44	43-44	1	1%
	Waist	37-38	34		
	Hips	47-48	43		

Hips. Size 10 was comparable in hip measurement. Company sizes 12, 14 and 16 were one inch larger, size 18 was three inches larger and size 22 was four inches larger than the sample.

The company was one inch larger than 81 per cent of the sample, three inches larger than one per cent of the sample and four inches larger for one per cent of the sample. For 17 per cent of the sample the company was comparable.

COMPARISON OF GOVERNMENT STANDARDS

The Government Standards used in the comparison were from the "Misses' Body Measurements, Regular Height, Average Hip" table.

Seventh Grade Sample

Waist. The sample waist measurements in five of the six size areas were larger than the government standard measurement. In the sixth area, size 10, the government standards measurement and the sample were comparable.

The government chart did not include 12 per cent of the smallest girls of the sample. The government standards were smaller for the waist measurements than the majority of the sample it did include. The government standard was smaller than 68 per cent of the sample. For 20 per cent of the waist measurements, the government standards were comparable to the sample.

Hips. Sizes 8 and 10 were comparable for the government measurements and the sample measurements. Sizes 12, 14, 16, and 18 were one inch larger by government measurement than by the sample.

TABLE X

SEVENTH GRADE COMPARED WITH GOVERNMENT STANDARD

Government size	Government measurement	Sample measurement	Number in sample (N = 129)	Per cent of sample	
	Bust	27-28	10	8%	
	Waist	22.7			
	Hips	30.1			
	Bwl*	13.9			
	Bust	29	5	4%	
	Waist	22.9			
	Hips	31.1			
	Bwl*	15.2			
8	Bust	31	30-31	38	29%
	Waist	23.5	24.3		
	Hips	32.5	32.2		
	Bwl*	15.13	14.7		
10	Bust	32.5	32	26	20%
	Waist	24.5	24.5		
	Hips	34	33.3		
	Bwl*	15.25	15.3		
12	Bust	34	33-34	27	21%
	Waist	25.5	25.8		
	Hips	36	34.7		
	Bwl*	15.5	15		
14	Bust	35.5	35-36	14	11%
	Waist	27	27.6		
	Hips	38	36.9		
	Bwl*	15.63	15		
16	Bust	37	37-38	6	5%
	Waist	28.5	30.2		
	Hips	40	38.3		
	Bwl*	15.88	15.4		

TABLE X (continued)

Government size		Government measurement	Sample measurement	Number in sample (N = 129)	Per cent of sample
18	Bust	39	39-40	3	2%
	Waist	30.5	33.2		
	Hips	42	40.5		
	Bwl*	16	15.5		
20	Bust	41			
	Waist	32.5			
	Hips	44			
	Bwl*	16.25			
22	Bust	43			
	Waist	34.5			
	Hips	46			
	Bwl*	16.38			

*Back waist length.

For 49 per cent of the sample the government measurements were comparable. The government standard was one inch larger than the sample measurement for 39 per cent of the sample.

Back Waist Length. The back waist length for the government standards was approximately one-half inch larger for each size except size 10 where it was comparable to the sample.

For 10 per cent of the sample the back waist length was comparable. For the rest of the sample it was about one-half inch larger than the sample.

Tenth Grade Sample

The sample and the government standards were comparable for sizes 8, 10, 12, 14, and 20. The measurements of sizes 16 and 22 were larger in the sample than in the government standard measurement. For size 18 the government standard was three inches larger than the sample.

The government standard chart did not include 2 per cent of the smallest girls of the tenth grade sample. The government standard was either comparable or smaller than the sample except for 2 per cent of the sample. For 91 per cent of the sample the government was comparable. The government standard was smaller than 8 per cent of the sample.

Hips. Sizes 12 and 16 were comparable to the sample. The government standards were smaller than sizes 8 and 10. Sizes 14 and 22 were one inch larger in measurement by the government standards than the sample measurements. Size 18 was three inches

TABLE XI

TENTH GRADE COMPARED WITH GOVERNMENT STANDARD

Government size	Government measurement	Sample measurement	Number in sample (N = 131)	Per cent of sample	
	Bust	27-28	1	1%	
	Waist	23.5			
	Hips	31.5			
	Bwl*	13.5			
	Bust	29	1	1%	
	Waist	23			
	Hips	31			
	Bwl*	15.5			
8	Bust	31	30-31	13	10%
	Waist	23.5	23.3		
	Hips	32.5	33.2		
	Bwl*	15.13	15		
10	Bust	32.5	32	24	18%
	Waist	24.5	24.1		
	Hips	34	35		
	Bwl*	15.25	15.8		
12	Bust	34	33-34	57	44%
	Waist	25.5	25.3		
	Hips	36	35.8		
	Bwl*	15.5	15.8		
14	Bust	35.5	35-36	23	18%
	Waist	27	26.5		
	Hips	38	36.8		
	Bwl*	15.63	15.8		
16	Bust	37	37-38	9	7%
	Waist	28.5	29		
	Hips	40	39.1		
	Bwl*	15.88	15.5		
18	Bust	39	39-40	1	1%
	Waist	30.5	27.5		
	Hips	42	38.5		
	Bwl*	16	16		

TABLE XI (continued)

Government size		Government measurement	Sample measurement	Number in sample (N = 131)	Per cent of sample
20	Bust	41	41-42	1	1%
	Waist	32.5	32.5		
	Hips	44	40		
	Bwl*	16.25	16		
22	Bust	43	43-44	1	1%
	Waist	34.5	36		
	Hips	46	45		
	Bwl*	16.38	16		

*Back waist length.

larger by government standard measurement, and size 20 was four inches larger.

For 51 per cent of the sample the government standards were comparable. The government standards were smaller than the sample for 28 per cent of the sample, and one inch larger for 19 per cent of the sample. The government was three to four inches larger than 2 per cent of the sample.

Back Waist Length. The measurements for the back waist length are within one-half an inch for all sizes except for size 10. For size 10 the sample is over one-half inch larger than the government standard.

For 82 per cent of the sample the back waist length is within one-half an inch. For 18 per cent of the sample the government standard is more than one-half inch smaller than the sample.

College Freshmen Sample

Waist. The measurements for six of the seven sizes were comparable for the government standard and the sample. The measurement of size 14 was smaller by government standard than by the sample measurement.

The chart included all of the college freshmen sample. The waist sizes were comparable for 70 per cent of the sample. The government standards were smaller than 29 per cent of the sample.

Hips. For sizes 12, 14 and 16 the government standards and the sample were comparable. The government standards were

TABLE XII
COLLEGE FRESHMEN COMPARED WITH GOVERNMENT STANDARD

Government size		Government measurement	Sample measurement	Number in sample (N = 144)	Per Cent of sample
8	Bust	31	31	9	6%
	Waist	23.5	23.5		
	Hips	32.5	34.2		
	Bwl*	15.13	14.8		
10	Bust	32.5	32	15	10%
	Waist	24.5	23.9		
	Hips	34	34.9		
	Bwl*	15.25	15.2		
12	Bust	34	33-34	66	46%
	Waist	25.5	25		
	Hips	36	36		
	Bwl*	15.5	15.4		
14	Bust	35.5	35-36	42	29%
	Waist	27	27.4		
	Hips	38	37.3		
	Bwl*	15.63	15.5		
16	Bust	37	37-38	9	6%
	Waist	28.5	28.3		
	Hips	40	39.9		
	Bwl*	15.88	16.1		
18	Bust	39	39-40	2	1%
	Waist	30.5	30.3		
	Hips	42	39.8		
	Bwl*	16	15.8		
20	Bust	41			
	Waist	32.5			
	Hips	44			
	Bwl*	16.25			
22	Bust	43	43-44	1	1%
	Waist	34.5	34		
	Hips	46	43		
	Bwl*	16.38	16.5		

*Back waist length.

smaller for sizes 8 and 10 than the sample. Size 18 was two inches larger by government standard than the sample measurement. Size 22 was three inches larger by government standard.

For the hip measurement, 81 per cent of the sample was comparable to the government standard. The government standard was smaller than the sample for 16 per cent of the sample. The government standard was two to three inches larger than 2 per cent of the sample.

Back Waist Length. All of the back waist measurements for the government standard are within one-half inch of the sample.

COMPARISON OF PATTERN STANDARDS

Seventh Grade Sample

Waist. The waist measurement of the pattern standard is comparable to the sample for sizes 12, 14, and 16. The measurement for sizes 10, 18, and 20 for the pattern standard is smaller than the sample measurement.

This pattern chart does not include the smaller sizes of the sample range. For 12 per cent of the sample there is no provision on this chart. The measurements were comparable for 52 per cent of the sample. The pattern standard measurements were smaller than the sample for 36 per cent of the sample.

Hips. For sizes 10 and 12 the pattern standard and the sample measurements were comparable. The measurements for sizes 14, 16, 18, and 20 were one inch larger by the pattern standard.

TABLE XIII

SEVENTH GRADE COMPARED WITH PATTERN STANDARD

Pattern size	Pattern measurement	Sample measurement	Number in sample (N = 129)	Per cent of sample	
	Bust	27-28	10	8%	
	Waist	22.7			
	Hips	30.1			
	Bwl*	13.9			
	Bust	29	5	4%	
	Waist	22.9			
	Hips	31.1			
	Bwl*	15.2			
10	Bust	31	30-31	38	29%
	Waist	24	24.3		
	Hips	33	32.2		
	Bwl*	15.75	14.7		
12	Bust	32	32	26	20%
	Waist	25	24.5		
	Hips	34	33.3		
	Bwl*	16	15.3		
14	Bust	34	33-34	27	21%
	Waist	26	25.8		
	Hips	36	34.7		
	Bwl*	16.25	15		
16	Bust	36	35-36	14	11%
	Waist	28	27.6		
	Hips	38	36.9		
	Bwl*	16.5	15		
18	Bust	38	37-38	6	5%
	Waist	30	30.1		
	Hips	40	38.3		
	Bwl*	16.75	15.4		
20	Bust	40	39-40	3	2%
	Waist	32	33.2		
	Hips	42	40.5		
	Bwl*	17	15.5		

TABLE XIII (continued)

Pattern size	Pattern measurement	Sample measurement	Number in sample (N = 129)	Per cent of sample
40	Bust	42		
	Waist	34		
	Hips	44		
	Bwl*	17.13		
42	Bust	44		
	Waist	36		
	Hips	46		
	Bwl*	17.25		

*Back waist length.

The hip measurements of the pattern standard were comparable to the sample for 49 per cent of the sample. The pattern standard was one inch larger than the sample for 39 per cent of the sample.

Back Waist Length. The back waist length for sizes 10 and 12 was over one-half an inch larger for the pattern standard. The other sizes were all over an inch larger for the pattern standard.

The back waist length was larger by one-half inch for the pattern standard for 49 per cent of the sample, and by over an inch for 39 per cent of the sample.

Tenth Grade Sample

Waist. The pattern standard for sizes 10, 12, 14, and 42 were comparable to the sample measurements. The measurements for sizes 16, 18, and 40 were one inch larger by the pattern standard, and size 20 was four inches larger by pattern standard.

The chart did not include 2 per cent of the smallest tenth grade girls. The waist measurements for the sample and the pattern standard were comparable for 73 per cent of the sample. The pattern standard was one inch larger than the sample for 26 per cent of the sample and four inches larger than the sample for one per cent of the sample.

Hips. The pattern standard measurements were smaller for two sizes, 10 and 12, than the sample. The measurements for sizes 14 and 18 were comparable for the pattern standard and the sample measurements. Sizes 16 and 42 had measurements one inch larger

TABLE XIV
TENTH GRADE COMPARED WITH PATTERN STANDARD

Pattern size	Pattern measurement	Sample measurement	Number in sample (N = 131)	Per cent of sample	
	Bust	27-28	1	1%	
	Waist	23.5			
	Hips	31.5			
	Bwl*	13.5			
	Bust	29	1	1%	
	Waist	23			
	Hips	31			
	Bwl*	15.5			
10	Bust	31	30-31	13	10%
	Waist	24	23.3		
	Hips	33	33.2		
	Bwl*	15.75	15		
12	Bust	32	32	24	18%
	Waist	25	24.1		
	Hips	34	35		
	Bwl*	16	15.8		
14	Bust	34	33-34	57	44%
	Waist	26	25.3		
	Hips	36	35.8		
	Bwl*	16.25	15.8		
16	Bust	36	35-36	23	18%
	Waist	28	26.5		
	Hips	38	36.8		
	Bwl*	16.5	15.7		
18	Bust	38	37-38	9	7%
	Waist	30	29		
	Hips	40	39.1		
	Bwl*	16.75	15.5		
20	Bust	40	39-40	1	1%
	Waist	32	27.5		
	Hips	42	38.5		
	Bwl*	17	16		

TABLE XIV (continued)

Pattern size	Pattern measurement	Sample measurement	Number in sample (N = 131)	Per cent of sample	
40	Bust	42	41-42	1	1%
	Waist	34	32.5		
	Hips	44	40		
	Bwl*	17.13	16		
42	Bust	44	43-44	1	1%
	Waist	36	36		
	Hips	46	45		
	Bwl*	17.25	16		

*Back waist length.

on the pattern standard than the sample measurement. Size 20 was three inches larger and size 40 was four inches larger than the sample.

The pattern standard was smaller in hip measurement than the sample for 28 per cent of the sample. The pattern standard and the sample were comparable for 51 per cent of the sample. The pattern standard was one inch larger than the sample measurements for 19 per cent of the sample. The pattern standard measurements were three to four inches larger than the sample for 2 per cent of the sample.

Back Waist Length. Sizes 12 and 14 are less than one-half inch larger by the pattern standard than by the sample. Sizes 10 and 16 are over one-half an inch and sizes 18 through 42 are an inch or more larger for the pattern standard.

For 62 per cent of the sample the pattern standard is one-half inch larger than the sample. The pattern standard is over one-half inch larger for 28 per cent and an inch or more larger for 28 per cent of the sample.

College Freshmen Sample

Waist. The measurements for sizes 10 and 16 were comparable for the pattern standard and the sample. The measurements of sizes 12, 14, 18, and 20 were one inch larger for the pattern standard. For size 42 the waist measurement for the pattern standard was two inches larger than the sample measurement.

TABLE XV
COLLEGE FRESHMEN COMPARED WITH PATTERN STANDARD

Pattern size		Pattern measurement	Sample measurement	Number in sample (N = 144)	Per cent of sample
10	Bust	31	31	9	6%
	Waist	24	23.5		
	Hips	33	34.2		
	Bwl*	15.75	14.8		
12	Bust	32	32	15	10%
	Waist	25	23.9		
	Hips	34	34.9		
	Bwl*	16	15.2		
14	Bust	34	33-34	66	46%
	Waist	26	25		
	Hips	36	36		
	Bwl*	16.25	15.4		
16	Bust	36	35-36	42	29%
	Waist	28	27.4		
	Hips	38	37.3		
	Bwl*	16.5	15.5		
18	Bust	38	37-38	9	6%
	Waist	30	28.3		
	Hips	40	39.9		
	Bwl*	16.75	16.1		
20	Bust	40	39-40	2	1%
	Waist	32	30.3		
	Hips	42	39.8		
	Bwl*	17	15.8		
40	Bust	42			
	Waist	34			
	Hips	44			
	Bwl*	17.13			
42	Bust	44	43-44	1	1%
	Waist	36	34		
	Hips	46	43		
	Bwl*	17.25	16.5		

*Back waist length.

The range of the chart covered the range of the college freshmen sample. The sample and the pattern standard measurements were comparable for 35 per cent of the sample. The pattern standard measurements were one inch larger than 63 per cent of the sample measurements. For one per cent of the sample the pattern standard was two inches larger than the sample.

Hips. The hip measurements for sizes 10 and 12 were smaller for the pattern standard than for the sample. Sizes 14, 16, and 18 were comparable in measurements for the pattern standard and the sample. The measurement for size 20 was two inches larger and for size 42 three inches larger by pattern standard than by the sample.

For the hip measurement the pattern standard was smaller for 16 per cent of the sample. The sample and the pattern standard were comparable for 81 per cent of the sample. The pattern standard was two to three inches larger than the sample for 2 per cent of the sample.

COMPARISON OF SAMPLE AS A WHOLE

In comparing the sample as a whole with the companies, government standards, and pattern standards it was noticeable that two of the companies, A and B, did not provide for the largest measurements in the sample, or 0.7 per cent of the sample. Also, the government standards and pattern standards charts used in the study did not provide for the smallest measurements of the sample, or 10 per cent of the sample. Both the government

TABLE XVI

SAMPLE AVERAGES COMPARED WITH COMPANIES,
GOVERNMENT STANDARDS, AND PATTERN STANDARDS

	(N=404) Sample	A	Size	B	Size	C	Size	D*	Size	E**	Size	N	Per cent of sample
Bust	27-28	27-28		29		27-28							
Waist	22.8	22-23	10	24	10	22-23	4					11	3%
Hips	30.3	32-33		32		31-32							
Bust	29-30	29-30		30		29-30							
Waist	23.9	23-24	12	25	12	23-24	6					29	7%
Hips	32	33-34		35		33-34							
Bust	30-31					30-31				31			
Waist	24					24-25	8			24	10	60	15%
Hips	32.7					34-35				33			
Bust	31-32	31-32		32		31-32		31		32			
Waist	24.1	25-26	14	26	14	25-26	10	23.5	8	25	12	102	25%
Hips	33.9	35-36		37		35-36		32.5		34			
Busty	33-34	33-34		34		33-34		34		34			
Waist	25.3	27-28	16	28	16	27-28	12	25.5	12	26	14	150	37%
Hips	35.7	37-38		39		37-38		36		36			
Bust	35-36	35-36		36		35-36		35.5		36			
Waist	27.1	29-30	18	30	18	29-30	14	27	14	28	16	79	20%
Hips	37.1	39-40		41		39-40		38		38			

TABLE XVI (continued)

	(N=404) Sample	A	Size	B	Size	C	Size	D*	Size	E**	Size	N	Per cent of sample
Bust	37-38	37-38		38		37-38		37		38			
Waist	29	31-32	20	32	20	31-32	16	28.5	16	30	18	24	6%
Hips	39.2	41-42		43		41-42		40		42			
Bust	39-40	39-40		40		39-40		39		40			
Waist	31.3	33-34	22	34	22	33-34	18	30.5	18	32	20	6	1%
Hips	39.9	43-44		46		43-44		42		42			
Bust	41-42					41-42		41		41			
Waist	32.5					35-36	20	32.5	41	34	40	1	0.2%
Hips	40					45-46		44		44			
Bust	43-44					43-44		43		44			
Waist	35					37-38	22	34.5	43	36	42	2	0.5%
Hips	44					47-48		46		46			

*Government standard.

**Pattern standard.

standards and the pattern standards had other charts that did provide for the smaller sizes, such as Juniors and Teens.

Company C differed from the other companies not only in offering larger sizes but also in having an overlapping size at 30-31. The pattern standards did a similar lapping in using a 31, 32, then 34, 36, etc., series. Companies A and C used the same measurements for all their sizes (though the size names, as 12, 14, 16 were not identical) with the exception of the hip measurement of the first size. Beginning with bust size 32, Company B conformed to the second waist measurements of Companies A and C in each case, but Company B's hip measurements were one inch larger for each size except the last where there was an increase of two inches. The smaller sizes of Company B had measurements that were irregular in relation to Company A and Company C.

The measurements of the government standards and the pattern standards were consistently smaller when compared with the companies' measurements. The government standards were, for most measurements, smaller than the pattern standards' measurements.

Measurements of Companies

Waist. The sample as a whole compared to the companies showed the sample waist measurement through sizes 31-32 corresponding to Companies A and C and about an inch smaller than Company B. Sizes 33-34, 35-36, and 39-40 of the sample had waist measurements an inch less than Companies A and C and two

inches less than Company B. Size 37-38 of the sample was two inches smaller than Companies A and C and three inches smaller than Company B. The two largest sizes of the sample had waist measurements two inches smaller than Company C.

By percentages, the sample waist measurements were smaller than the three companies' measurements by an inch or more for approximately 64 per cent of the sample. Only about 10 per cent of the sample waist measurements were comparable to the companies.

Hips. The hip measurements for the sample were consistently smaller than the companies' measurements. All of the sizes through 37-38 were one inch smaller for the sample than for Companies A and C. Size 39-40 was three inches smaller than Companies A and C and sizes 41-42 and 43-44 were five and three inches smaller respectively than Company C. The sample was three inches smaller than Company B in most sizes. In one size the sample was one inch smaller, but in another the sample was six inches smaller than Company B.

The hip measurements for the sample were 100 per cent smaller than the measurements of the companies. Some of the measurements were only an inch larger but others were three inches, five inches, and six inches larger than the sample.

Measurements of Government Standards

Waist. Comparing the government standard range to the sample measurements showed approximately comparable waist measurements in all cases. Some of the government standard measurements

were slightly higher and some were slightly lower than the sample, but there was no difference greater than one-half inch.

For the government standard the waist measurements compared favorable with the sample for 100 per cent of the sample.

Hips. Size 31-32 was larger for the sample than the government standard. The next three sizes were comparable, but the three largest sizes were two to four inches smaller for the sample than for the government standard measurements.

For the hip measurements 25 per cent of the sample was larger than the government measurement. For 63 per cent of the sample the government measurements were comparable. For 1.7 per cent of the sample, the sample as a whole was two to four inches smaller than the government standard.

Measurements of Pattern Standards

Waist. The waist measurements for the pattern standards and the sample were comparable for five sizes - 31, 32, 34, 36, and 40. Sizes 38, 42, and 44 were one inch smaller for the sample than for the pattern standard.

The waist measurements for the pattern standard were comparable for approximately 98 per cent of the sample. The remaining sizes of the sample were one inch smaller than the pattern standard.

Hips. For the hip measurements sizes 31, 32, 34, and 36 were comparable to the sample. The sample was two inches smaller for sizes 38, 40, and 44, and four inches smaller for size 42 than the pattern standards.

For 97 per cent of the sample the hip measurements of the pattern sample were comparable. The rest of the sample was between two and four inches smaller than the pattern standard.

RECOMMENDATION FOR SIZING CHART

In view of the findings of the sample, the following chart is recommended as one which more nearly conforms to today's secondary school and college girl. The chart, though based on the sample measurements, is similar to the pattern standards chart used in the study.

TABLE XVII

RECOMMENDED SIZING CHART

Bust	Waist	Hips	Back waist length
27-28	23	31	14
29-30	24	32	15
31-32	25	34	15.25
33-34	26	36	15.5
35-36	28	38	15.75
37-38	30	40	15.88
39-40	32	42	16
41-42	34	44	16.13
43-44	36	46	16.25

It is also suggested that the size name be that of the bust measurement to help save confusion as to what a number, such as "size 12" means. From information obtained in an interview and from a letter, two companies "resized" their uniforms in recent years. But only the size name was changed, not the measurements. They felt that for psychological reasons a person would prefer to say they wore a smaller size.

QUESTIONNAIRE

Each girl was questioned orally as she was being measured. Most of the girls responded to the questions without hesitation. Others were reluctant to express an opinion or had no opinion.

For the sample as a whole approximately 57 per cent of the girls said that they did like the present uniform they wore. The sample with the greatest percentage, 71 per cent, was the college freshmen. These girls wore the one-piece tennis-type uniform. A majority of the seventh grade and tenth grade girls who would prefer a uniform other than the one-piece uniform now required would rather have shirts and shorts. Fifty-one per cent of the seventh grade sample would like to have a colored uniform. While 52 per cent of the tenth grade sample would like to have a colored uniform rather than the white one.

Though a majority of the college freshmen were satisfied with the type of uniform and all of them preferred white, over half did suggest a change in the sleeve design.

TABLE XVIII
COMPOSITE OF QUESTIONNAIRE

	(129) Seventh		(131) Tenth		(144) Freshmen		(404) Per cent of whole sample
	N	%	N	%	N	%	
1. Do you like your gym suit?							
Yes	27	21%	34	26%	91	63%	38%
Yes, but prefer another style or color	47	36%	21	16%	11	8%	19%
No	53	41%	63	48%	41	28%	39%
2. If no, what would you change?							
A. Style:							
With skirt	24	19%	5	4%	2	1%	8%
Shirt and shorts	45	35%	57	48%	32	22%	33%
Either	8	6%	-	-	-	-	2%
Hockey tunic	-	-	-	-	1	1%	0.2%
Coulottes	-	-	-	-	2	1%	0.5%
One-piece suit	-	-	-	-	3	2%	0.7%
Total		60%		52%		27%	44.4%
B. Color							
Blue	30	25%	3	2%	Liked		8%
Green	17	13%	27	21%	white		11%
Darker color than white	3	2%	23	18%	suggested		7%
Pink	3	2%	-	-	changes		0.7%
Yellow	-	-	1	1%	-		0.2%
Brown	-	-	1	1%	-		0.2%
Any besides white	11	9%	12	9%	-		6%
Total		51%		52%			
C. Other							
Change snaps to zipper	2	2%	-	-	-	-	0.5%
Change elastic waist	7	5%	-	-	-	-	2%
Material easier to iron	2	2%	-	-	-	-	0.5%
Shrink less	2	2%	-	-	-	-	0.5%
Add school name	1	1%	-	-	-	-	0.2%
Change pocket style	-	-	1	1%	-	-	0.2%
Change sleeve design	-	-	-	-	76	53%	19%
Change collar design	-	-	-	-	16	11%	4%

TABLE XVIII (continued)

	(129)		(131)		(144)		(404)
	Seventh N	%	Tenth N	%	Freshmen N	%	Per cent of whole sample
Change type of belt	-	-	-	-	2	1%	.5%
Decrease fullness of skirt	-	-	-	-	1	1%	.2%
3. Did you purchase your suit new? When? and four related questions. This question did not apply to the three situations used because of the methods used to distribute the suits.							
4. Do you think your suit is com- fortable for movement?							
Yes	89	69%	75	57%	118	82%	70%
No	21	17%	15	11%	1	1%	9%
No, at times (as exercises, gymnas- tics, body mechanics)	2	2%	6	5%	16	11%	6%
5. If no, in what way?							
A. Tight in bust	1	1%	3	2%	1	1%	1%
waist	3	2%	-	-	3	2%	1%
hips	1	1%	1	1%	3	2%	1%
B. Loose in bust	27	21%	11	9%	6	4%	11%
waist	25	19%	17	13%	27	19%	17%
hips	52	40%	24	18%	4	3%	20%
C. Short waisted	2	2%	8	6%	28	13%	10%
Long waisted	75	58%	22	17%	13	9%	27%
D. Other							
Big all over	16	12%	5	4%	9	6%	7%
"Baggy"	7	5%	-	-	1	1%	2%
Shoulders tight	3	2%	3	2%	-	-	1%
Shoulders loose (big)	1	1%	-	-	10	7%	3%
Long	5	4%	-	-	-	-	1%
Loose in back	4	3%	5	4%	-	-	2%
Loose in legs	5	5%	2	2%	-	-	2%
Tight in legs							
Legs short	1	1%	-	-	-	-	0.2%
Short	-	-	1	1%	-	-	0.2%
Top binds	-	-	1	1%	-	-	0.2%

TABLE XVIII (continued)

	(129)		(131)		(144)		(404)
	Seventh		Tenth		Freshmen		Per cent
	N	%	N	%	N	%	of whole sample
Gets smaller when moving	-	-	1	1%	-	-	0.2%
Tight because gained weight	-	-	1	1%	-	-	0.2%
Skirt long	-	-	-	-	6	4%	
Front short waisted, back long							
waisted	-	-	-	-	1	1%	0.2%
Long waisted in back	-	-	-	-	1	1%	0.2%

A small percentage of the sample suggested other changes such as using zipper closings, removing elastic from the waist, and changing the collar design.

Seventy per cent of the sample and a majority of each group, 69 per cent of the seventh grade, 57 per cent of the tenth grade and 82 per cent of the college freshmen felt that the uniform was comfortable for activities. Many of the girls did feel that the suit did not fit them well in some way, but it was not a hinderance to their movement. Only 15 per cent of the sample as a whole felt that the uniform was uncomfortable for the movements performed in class.

The sample as a whole was asked question five which dealt with sizing problems even though question four concerning the comfortableness of the suit had been answered in the affirmative. Although the girls were reminded the uniform should be large

enough to allow for movement and some degree of growth, there were many indications that the uniforms were too large in one or more places. The main problem for the seventh grade sample was that the uniform was too large in the hips and too long waisted. Seventeen per cent of the seventh grade said the uniform was "baggy" or big all over. The uniform was loose in the bust and waist for 21 per cent and nineteen per cent, respectively. The uniform was too loose in the hips for 40 per cent of the sample. For 58 per cent the uniform was long waisted. The seventh grade girls who felt any part of the uniform was tight did not exceed 6 per cent of the sample.

Though the percentages were not as high as the seventh grade sample, the tenth grade girls had the problems of the uniform being too large in the hips and long in the waist. Only 4 per cent thought the suit was big all over. The bust was too loose for 9 per cent and the waist too large for 13 per cent of the sample. For 18 per cent of the sample the hips were too loose. For 17 per cent the uniform was long waisted. Less than 10 per cent of the tenth grade girls felt the uniform was too tight.

For the college freshmen the waist was the biggest problem. Nineteen per cent thought the suit too loose in the waist. Thirteen per cent felt the suit was short waisted and 9 per cent thought their suit was long waisted. Six per cent said they felt the suit was big all over. Seven per cent of the girls complained of the shoulders feeling loose.

For all three samples the majority of complaints about poor fitting concerned either waistline placement or looseness for some part of the uniform.

UNIFORM DESIGN RECOMMENDATION

The sketch of the uniform shown in Figure 1 is recommended as a design which would be appropriate and practical for physical education classes. The costume, with separate bloomer briefs, would be functional for activities and allow for freedom of movement, would fit most figures, and would be flattering to most body types.

The princess style should eliminate many of the problems of waistline placement. The uniform would be less restricting without a waist band or a belt. The difficulties caused by cap sleeves would be removed with the sleeveless design. The sleeve line would not be as binding nor have the tendency to tear as cap sleeves tend to do during reaching movements. The uniform would not be as binding on the wearer since the measurement from crotch to shoulder of the one piece suit would be eliminated. Because of growth spurts this becomes a problem with the secondary school girls.

With this design the arms and legs would be allowed complete freedom of movement. Stretching, reaching, kicking and other activities could be accomplished without feelings of confinement because of restricting waistline, binding sleeves, or tight pant legs.

This design is not only flattering to most figures, but suitable to the present day styles such as the shirt and the sports tennis dress. The college girls often need to wear the uniform with a skirt over it to the other immediately preceding or following the physical education class. For this reason it is suggested the uniform have a round neck or round collar which will look well with a skirt.

Alterations to be made in this design if the uniform were too long or too short are long.

The uniform should be made of a light weight material. Another suggestion would be to use a stretch material which would allow for movement of the arms and legs. The sleeves should be short and the material the same as the uniform.

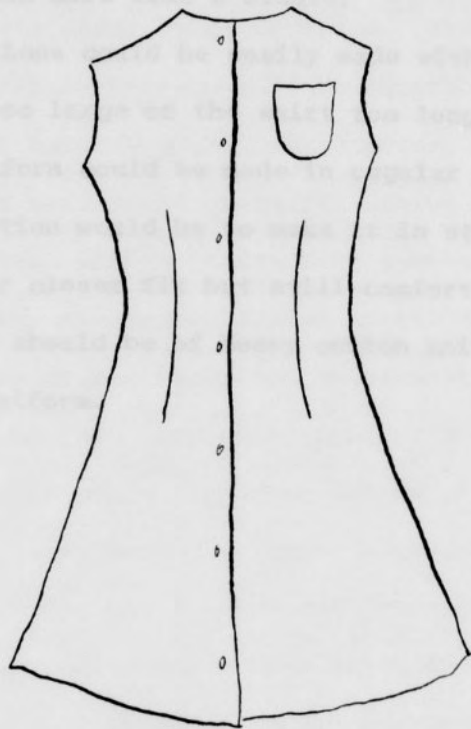


FIGURE 1
RECOMMENDED COSTUME

This design is not only flattering to most figures, but conforms to the present day styles such as the shift and the sports tennis dress. The college girls often need to wear the uniform with a skirt over it to the class immediately preceding or following the physical education class. For this reason it is suggested the uniform have a round neck or round collar which would look more like a blouse.

Alterations could be easily made with this design if the uniform were too large or the skirt too long.

The uniform could be made in regular gymwear material. Another suggestion would be to make it in stretch material which would allow for closer fit but still comfort of movement. The bloomer briefs should be of heavy cotton knit material the same color as the uniform.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The purposes of this study were to investigate the sizing of physical education uniforms and to develop a costume which would fit a wider range of sizes. The first problem was to make a comparison between uniform manufacturing companies and a sample of seventh grade, tenth grade, and college freshmen girls. The government standards sizing charts and the pattern companies' sizing charts were used as comparative examples of other measurements used in the sizing of garments. A second problem of the study was to determine how the students felt about the uniform they were required to wear.

The seventh grade sample consisted of one hundred and twenty-nine girls attending a junior high school in Charlotte, North Carolina. The one hundred and thirty-one girls of the tenth grade sample attended a Charlotte, North Carolina, high school. The college freshmen sample consisted of one hundred and forty-four girls who attended The University of North Carolina at Greensboro.

The body measurements of each girl were taken when she was clothed in bra and pants. The bust, waist, and hip measurements were used for the body measurements since these measurements are the ones used by the companies in their size charts.

The sample measurements for each age were averaged and then compared to each company standard, to the government standard, and the pattern standard.

When Company A was compared to each sample it was found that, in general, the company measurements for waist and hips were larger than the sample. The company range did not include the largest girls of the tenth grade and college freshmen samples.

The hip and bust measurements for Company B were also larger than each sample, in most cases. The range of the company did not include the largest girls of the tenth grade and college freshmen samples.

The size range of Company C was wide enough to cover all of the sizes in each sample. The waist measurement for the seventh grade was comparable to the sample. The waist of the tenth grade and the freshmen as well as the hip measurements of all three groups were larger for the company than the sample.

The government chart used in the study did not include the smaller girls in the seventh grade and the tenth grade samples. These standards were smaller for the waist measurements than a majority of the seventh grade sample. For the tenth grade and the college freshmen, the waist measurements were comparable for a majority of the girls. For the sample it included, these standards were comparable for a majority of the waist measurements for all three samples.

The pattern standards did not provide for the smallest sizes of the seventh grade and tenth grade samples. For the majority of the waist measurements the pattern standards were comparable for the seventh grade and the tenth grade samples. The standards were comparable or one inch larger for the college freshmen. For the hip measurements the sample was comparable to a majority of the sample that was included in the chart.

The questions were asked each girl as she was being measured. A majority, approximately 57 per cent, of the sample as a whole said they did like their uniform even though some preferred another style or color. The college girls were most in favor of their uniform. Seventy-one per cent of their sample said they liked their uniform, but over half suggested a style change in the sleeve design. Of the seventh grade and tenth grade sample, a majority of those who would like to change the uniform would prefer shorts and shirts. Over half of the seventh grade and tenth grade girls would prefer a different color other than white. The college freshmen sample had no suggestions for changing the color of the uniform from white. Most of the sample as a whole said they believed their uniform was comfortable for movement. The biggest problems for the seventh grade sample were suits too large in the hips and too long waisted. For the tenth grade sample looseness in the hips and too long in the waist were also the biggest problems for those whose uniforms did not fit. The waist was the main area of poor fit for the college freshmen. The waist was too loose or either too high or too low for many of those whose uniforms did not fit.

CONCLUSIONS

The sizing charts used by the three uniform manufacturing companies were not comparable to the measurements of the sample used in the study.

A majority of the seventh grade and tenth grade girls in the sample would prefer another type of uniform.

The college freshmen liked the style they were required to wear, but preferred a change in the sleeve.

RECOMMENDATIONS

From the results of this study the following recommendations are made:

1. That the uniform companies make a study of the measurements of the present day secondary school and college girl only, and use the findings to adjust the company sizing charts. (If only the consumer measurements were used perhaps the product would have better fit.)

2. More attention be paid to the back waist length measurement when sizing a uniform.

3. A study of uniform styling be made to find a basic design that would be suitable for physical education activities. A basic design of tank suit and leotard is used in the special areas of swimming and dance. It would seem there should be a basic design for physical education activities also.

1. [Faint text]

2. [Faint text]

3. [Faint text]

4. [Faint text]

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6. [Faint text]

7. [Faint text]

8. [Faint text]

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10. [Faint text]

11. [Faint text]

12. [Faint text]

13. [Faint text]

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16. [Faint text]

17. [Faint text]

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19. [Faint text]

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BIBLIOGRAPHY

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19. [Faint text]

20. [Faint text]

BIBLIOGRAPHY

A. BOOKS

1. Bogert, L. Jean, Nutrition and Physical Fitness. Philadelphia: W. B. Saunders Company, 1949. pp. 610
2. Bucher, Charles A., Administration of School Health and Physical Education Programs. Saint Louis: The C. V. Mosby Company, 1963. pp. 498.
3. Chaney, Margaret S. and Margaret Ahlborn, Nutrition. Fourth edition. Boston: Houghton Mifflin Company, 1949. pp. 448.
4. Hughes, William L. and Ester French, The Administration of Physical Education. New York: The Ronald Press Company, 1954. pp. 383.
5. Hurlock, Elizabeth B., Child Development. New York: McGraw-Hill Book Company, Inc., 1950. pp. 669.
6. Kalb, S. William, and Christian A. Hovde, Your Body Its Anatomy and Nutrition. Maplewood, New Jersey: C. S. Hammond & Company, 1962. pp. 144.
7. Lee, Mabel, The Conduct of Physical Education. New York: A. S. Barnes and Company, 1937. pp. 561.
8. Schwendener, Norma, A History of Physical Education in the United States. New York: A. S. Barnes and Company, 1942. pp. 237.
9. Webb, Mildred Mark, The Heritage of Dress. New York: The McClure Company, 1908. pp. 393. Referred to Dr. Louis Flaccus, article in The Morning Leader, April 17, 1906.
10. Williams, Jessie F., Clifford Brownell, and Elmon L. Vernier, The Administration of Health Education and Physical Education. Philadelphia: W. B. Saunders Company, 1958. pp. 387.

B. PERIODICALS

11. Aldrich, Clarence B., "The Evolution of Gymnasium Clothing for Women," The Journal of Health and Physical Education, 1:15-17+, October, 1930.
12. Dearborn, George, "The Psychology of Clothing," Psychological Monographs, 26:1-72, 1918.
13. Morton, Grace M., "Psychology of Dress," Journal of Home Economics, 18:584-586, October, 1926.
14. Read, Katherine H., "Clothes Help Build Personality," Journal of Home Economics, 42:348-350, May, 1950.
15. Ryan, Mary S., "Psychological Effects of Clothing," Cornell University Agricultural Experiment Station Bulletin 882, September, 1952. pp. 39.
16. Small, Claire, Chairman, "Standards in Physical Education Costumes for Girls and Women," Research Quarterly, 5:70-84, October, 1934.

C. PAMPHLETS AND CHARTS

17. Broderick, catalogue of physical education uniforms of Tom Broderick Company, Inc., California N. D.
18. Costumes for Gymnasium, Pool, and Dance, catalogue of physical education uniforms of Aldrich and Aldrich, Inc., Chicago. N. D.
19. McCalls Pattern Company Pattern Book, sizing chart, McCalls Corporation, New York, May, 1966.
20. Moore Gymwear 1965, catalogue of physical education uniforms of E. R. Moore Company, Chicago, 1965.
21. Moore Uniform Gymwear is the One Practical Answer to These Ten Basic Problems, E. R. Moore Company, Chicago. N. D.
22. Perspective on Gym-Wear, The Tom Broderick Company, Inc., Kansas. N. D.
23. Pryor, Helen B., Width-Weight Tables. Leland Stanford Junior University, 1940. pp. 15.

24. Simplicity Pattern Company Pattern Book, sizing chart, Simplicity Pattern Company, Inc., New York, May, 1966.
25. Body Measurements for the Sizing of Women's Patterns and Apparel, U. S. Department of Commerce, National Bureau of Standards, Institute for Applied Technology, Commercial Standard CS 215-58, Springfield, Virginia, U. S. Department of Commerce, 1958.

D. UNPUBLISHED MATERIAL

26. Silverman, Sylvia A., "Clothing and Appearance, Their Psychological Implications for Teen-Age Girls," Teachers' College, Columbia University, Contributions to Education No. 912, 1945. pp. 140.
27. Warden, Jessie A., "Some Factors Effecting the Satisfaction and Dissatisfaction with Clothing of Women Students in the College of Education and the College of Liberal Arts," unpublished Doctor's Dissertation, The Pennsylvania State University, University Park, 1955. pp. 320.
28. Weiner, Melvin, "Psychological Factors in Physical Education Activities Among Teenage Girls." (Received from the E. R. Moore Company.) N. D.

APPENDIX

SAMPLE OF QUESTIONNAIRE

		Yes	No
GRADE _____	1. Do you like your gym suit?	___	___
	2. If no, what would you change:		
	a. Style - shorts and shirt, tunic, one piece, _____?	___	___
Type of School Gym Suit _____	b. Color choice (name color) _____	___	___
	c. Other _____	___	___
Bust _____	3. Did you purchase your suit new? When? _____	___	___
Waist _____	a. Did the size you requested fit you?	___	___
Hips _____	b. Was the size available or	___	___
Back Length _____	c. Did you wait for your size or	___	___
	d. Did you take what they had?	___	___
	4. Do you think your suit is com- fortable for movement?	___	___
	5. If no, in what way:		
	a. Tight in bust, waist, hips	___	___
	b. Loose in bust, waist, hips	___	___
	c. Short waisted, long waisted	___	___
	d. Other	___	___

MEASUREMENTS OF SEVENTH GRADE SAMPLE

Bust	Waist	Hips	Back waist length
27	23	31.5	13
27	22	29.5	13
27.5	23	31.5	13.5
27.5	24	29.5	14
27.5	22	29.5	13.5
28	22.5	30	12.5
28	23	30	15
28	23	29.5	14.5
28	22.5	29.5	14.5
28	22.5	29	14.5
29	22.5	30	14.5
29	22	30.5	15
29	22.5	31	16
29	23.5	31.5	14.5
29	24	32.5	16
29.5	25	32.5	14.5
29.5	26	32.5	14
29.5	23.5	31.5	14.5
29.5	23	31	15
29.5	23.5	30	14
29.5	23.5	29.5	14
30	24.5	32.5	15
30	25.5	35.5	14.5
30	23	33.5	15
30	24	33	14
30	26	33	15
30	24	33	16
30	23	32.5	16
30	28	32	13
30	23.5	32	15
30	25	31.5	13.5
30	23.5	31.5	15
30	23.5	31	15
30	23	31	15
30	24.5	31	14.5
30.5	24	31	15
30.5	24	33.5	14
30.5	23	31.5	14
30.5	24.5	31	13.5
30.5	25	32	15
30.5	25	31.5	15
30.5	22.5	31.5	16

MEASUREMENTS OF SEVENTH GRADE SAMPLE
(continued)

Bust	Waist	Hips	Back waist length
30.5	24	31.5	16
30.5	24	33.5	14
31	24	33.5	16
31	24	33	15.5
31	24	32	15.5
31	24	32.5	15.5
31	25.5	34.5	15.5
31	25	34	15.5
31	23.5	32	14
31	25.5	33	13.5
31	25	31	12.5
31.5	24.5	36	14.5
31.5	25	35.5	15.5
31.5	26	35	16
31.5	24	34	16
31.5	23.5	34	16
31.5	24.5	33.5	14.5
31.5	23.5	33.5	15
31.5	23.5	33	15.5
31.5	23.5	33	15.5
31.5	24	33	14.5
31.5	24	32.5	15.5
31.5	24.5	32.5	16
31.5	24	32.5	16
31.5	24	32	14.5
32	25	36	15.5
32	26.5	35.5	15
32	23.5	34	16.5
32	26.5	34	14
32	25.5	34	16
32	25.5	33.5	14.5
32	24	33	14.5
32	25	33	15
32	25	33	16
32	24.5	33	14.5
32	24	32	16
32	24.5	31.5	14.5
32.5	25	32.5	14.5
32.5	24.5	33	14.5
32.5	24	34	17
32.5	24.5	34	16
32.5	26	34	15.5
32.5	26	35.5	15
32.5	27	35	15.5
33	25.5	34.5	14

MEASUREMENTS OF SEVENTH GRADE SAMPLE
(continued)

Bust	Waist	Hips	Back waist length
33	25	34	16
33	25.5	33	15.5
33	26	32.5	13
33	26	36	15
33	25.5	36	15
33	25.5	35.5	15.5
33	25	35.5	16
33	25	35.5	17
33	27	34.5	15
33.5	28	37	15
33.5	26	34.5	15.5
33.5	24	32	14.5
34	26	35	14.5
34	26	34.5	14.5
34	26	34.5	13.5
34	26	33.5	15
34	27	36.5	14
34	27	36.5	15
34	26.5	36	14
34.5	28	38	16
34.5	28	37.5	14.5
34.5	27.5	36.5	15
34.5	28	35	13
35	26	36	16
35	27	36	13.5
35	28	38	17
35	28	37.5	15
35	25.5	37	14
35.5	30	39	15.5
35.5	29	38	14
35.5	28	37	15.5
35.5	27	36	15
35.5	27	35	16
36.5	30.5	37	15
37	26	37.5	15.5
37	28	38	15
37	29.5	38.5	16
37	34.5	39.5	14
37.5	32	40	17
38.5	31.5	37.5	15
38.5	32	42	15
39	36	42	16.5

AVERAGE FOR SEVENTH GRADE SAMPLE

Number	Bust	Waist	Hips	Back waist length
2	27	22.5	30.5	13
8	28	22.8	30	14.1
5	29	22.9	31.1	15.2
20	30	24.3	32	14.7
18	31	24.3	32.4	14.8
26	32	24.5	33.3	15.3
17	33	25.5	34.4	15.3
10	34	26.3	35.1	14.6
9	35	27.3	36.9	14.9
5	36	28.2	37	15.2
5	37	29.7	38	15.1
1	38	32	40	17
3	39	33.2	40.5	15.5

129 TOTAL

10	27-28	22.7	30.1	13.9
25	29-30	24	31.8	14.8
38	30-31	24.3	32.2	14.7
44	31-32	24.4	32.9	15.1
27	33-34	25.8	34.7	15
14	35-36	27.6	36.9	15
6	37-38	30.1	38.3	15.4
3	39-40	33.2	40.5	15.5

MEASUREMENTS OF TENTH GRADE SAMPLE

Bust	Waist	Hips	Back waist length
28	23.5	31.5	13.5
29	23	31	15.5
29.5	23	31.5	13.5
30	22.5	35	15.5
30	22.5	32	15.5
30.5	25	37.5	15
30.5	21.5	33	15
30.5	24.5	32.5	14
31	24	34	16
31	24	33.5	15
31	23	33	15
31	24.5	33	15.5
31	21.5	33	15.5
31	23.5	32	15
31	23	32	15
31.5	25.5	36	15
31.5	24	35	15.5
31.5	24.5	34.5	15
31.5	22.5	34.5	15
31.5	22.5	33.5	16.5
31.5	24.5	33.5	16
31.5	23.5	33.5	15
32	25	37	18
32	26	36.5	18
32	24.5	36.5	16
32	25	36	17
32	25.5	36	16
32	24	36	15.5
32	24.5	35.5	15.5
32.5	25	34.5	15.5
32	24	34.5	16
32	24	34.5	15
32	24.5	34	16.5
32	23.5	34	16
32	25.5	33.5	14
32	22	33.5	16
32	23	33.5	16.5
32	22.5	33	14
32	24	32	14
32.5	25	37.5	16
32.5	26.5	36	16.5
32.5	25.5	35.5	16.5
32.5	25	35	16
32.5	24.5	34.5	17

MEASUREMENTS OF TENTH GRADE SAMPLE
(continued)

Bust	Waist	Hips	Back waist length
32.5	25	34.5	15
32.5	24.5	33.5	16
33	27	39	16.5
33	25.5	36.5	15.5
33	25.5	36	16
33	25	36	16
33	26	35.5	15
33	24	35	14.5
33	25	35	15.5
33	25.5	35	14.5
33	24.5	35	16
33	23	35	14.5
33	24	34.5	17
33	24.5	34.5	16
33	25	34	15.5
33	24.5	34	15
33	23	34	15.5
33	22.5	33.5	15.5
33.5	27	39	17
33.5	26	38	16
33.5	25	36.5	16.5
33.5	24.5	36	15.5
33.5	25.5	36	15
33.5	26	36	15
33.5	26	35.5	16.5
33.5	23.5	35	16
33.5	23.5	34.5	16.5
33.5	24.5	34.5	14.5
34	24.5	34.5	15
34	24	35	16
34	26	35	16
34	24	36	13.5
34	25	35.5	16.5
34	24	35.5	15.5
34	26.5	35.5	15
34	25.5	35.5	17
34	25	35	15.5
34	26	35	14.5
34	24.5	36.5	16
34	26	36	16
34	26	36	16
34	27	36	16
34	25.5	36	15.5
34	25.5	37.5	16.5

MEASUREMENTS OF TENTH GRADE SAMPLE
(continued)

Bust	Waist	Hips	Back waist length
34	25.5	37	17
34	28	37	16
34	28	37	16
34	24	37	17
34	24	37	16.5
34	27	39	16
34	28.5	38.5	16
34	26.5	40	15
34.5	25.5	37.5	15
34.5	24	36.5	17
34.5	25	36.5	16
34.5	25.5	36	15
34.5	27.5	36	14
35	26.5	36	15
35	26	35.5	17
35	24	34.5	14.5
35	26	36.5	16.5
35	25.5	37.5	17
35	25	37	16
35.5	26	38	16
35.5	26.5	37	16
35.5	24.5	37	17
35.5	27.5	37	15
35.5	26.5	36	16.5
36	27	36.5	15
36	27.5	37	14
36	29	37.5	16
36	27.5	38	15.5
36	26.5	38	17
36	27	38	15.5
36	31.5	40.5	14.5
36.5	26.5	38	15
36.5	27.5	38.5	15.5
36.5	25.5	38.5	16
36.5	29	40	16
37	28.5	37	15
37	29.5	40	16
37.5	29	38.5	15.5
37.5	31	42.5	15.5
38	33	38.5	15
39.5	27.5	38.5	16
41.5	32.5	40	16
43	36	45	16

AVERAGE FOR TENTH GRADE SAMPLE

Number	Bust	Waist	Hips	Back waist length
1	28	23.5	31.5	13.5
1	29	23	31	15.5
3	30	22.7	32.8	14.8
10	31	23.5	33.3	15.1
24	32	24.1	35	15.8
23	33	24.8	35.2	15.7
34	34	25.6	36.2	15.8
11	35	25.6	36.3	15.7
12	36	27.3	37.5	15.7
6	37	27.7	38.7	15.6
3	38	31	39.8	15.3
1	40	27.5	38.5	16
1	42	32.5	40	16
1	43	36	45	16
131 TOTAL				
1	27-28	23.5	31.5	13.5
4	29-30	22.8	32.4	15
13	30-31	23.3	33.2	15
34	31-32	23.9	34.5	15.6
57	33-34	25.3	35.8	15.8
23	35-36	26.5	36.8	15.7
9	37-38	29	39.1	15.5
1	39-40	27.5	38.5	16
1	41-42	32.5	40	16
1	43-44	36	45	16

MEASUREMENTS OF COLLEGE FRESHMEN SAMPLE

Bust	Waist	Hips	Back waist length
30.5	23	32.5	15
30.5	23.5	35.5	15.5
30.5	25	34.5	15
30.5	23	34	14
31	22	34	14
31	24	34.5	15.5
31	24.5	36	14.5
31	23	33	14.5
31	23.5	34	15.5
31.5	24	35.5	15.5
31.5	24	35	15
31.5	23.5	33	14.5
31.5	23	33	15.5
32	24	33	15
32	23	33.5	14.5
32	24.5	34.5	15
32	22	34.5	15.5
32	23.5	35	16
32	23.5	35	15.5
32	24	35.5	14.5
32	25	36	15.5
32	24	36	15
32	25	36.5	15.5
32	26	37	15
32.5	26.5	37.5	14.5
32.5	26.5	37	16
32.5	26.5	36.5	15
32.5	26.5	36.5	15.5
32.5	25.5	37	15
32.5	25	34	15.5
32.5	25	36	15
32.5	25	35.5	15
32.5	25	35.5	15
32.5	24.5	35.5	14.5
32.5	24.5	36	16.5
32.5	24	35	15
32.5	24	35.5	15.5
32.5	23.5	36	15.5
33	23.5	35.5	15.5
33	24	36.5	16
33	24	36	15.5
33	24.5	36	14.5
33	24.5	32	14.5
33	24.5	36	15
33	24.5	36.5	16
33	25	36.5	15

MEASUREMENTS OF COLLEGE FRESHMEN SAMPLE
(continued)

Bust	Waist	Hips	Back waist length
33	25	36	15
33	25	36.5	15.5
33	25.5	36.5	15
33	25.5	37	15
33	25.5	33.5	16
33	25.5	36.5	15
33	25.5	35	15
33	26	37.5	17
33	26	35.5	14.5
33.5	27	37	14
33.5	26.5	36	16
33.5	26.5	38.5	15
33.5	25.5	36	15
33.5	25	34.5	15
33.5	25	36.5	16
33.5	25	36	16.5
33.5	25	35.5	15
33.5	25	34.5	15.5
33.5	25	35.5	15
33.5	24.5	37	16
33.5	24.5	36	16
33.5	23.5	34	15
33.5	23.5	35.5	16
33.5	24	34.5	15.5
33.5	24	34.5	15.5
33.5	24	36.5	16.5
34	22.5	34	14.5
34	23	35	15
34	24	36	16.5
34	24	35.5	16
34	24.5	36	15.5
34	24.5	37	15
34	25	36.5	16
34	25	35	15.5
34	25	36	15
34	25	35.5	15.5
34	25	35.5	13.5
34	25	36	15.5
34	25.5	37	15.5
34	25.5	38.5	15
34	26	36.5	14.5
34	26.5	37	15.5
34	27	37.5	16
34	27.5	37.5	14.5
34.5	27	39	16

MEASUREMENTS OF COLLEGE FRESHMEN SAMPLE
(continued)

Bust	Waist	Hips	Back waist length
34.5	26.5	38	15.5
34.5	26	38.5	14.5
34.5	25	36	16.5
34.5	25	37	15
34.5	24	34.5	15
34.5	24	37	16
35	24.5	37.5	16
35	25	35.5	14.5
35	25	36.5	15.5
35	25	36	15
35	25.5	35.5	15.5
35	25.5	36	14.5
35	25.5	36.5	14.5
35	25.5	35	15.5
35	26	38	17
35	26	35	16
35	26	37	16.5
35	26	36.5	15.5
35	26	38	14.5
35	26	37	14.5
35	26	37.5	16
35	27	36	15.5
35	27	40	16
35	27	37	15
35	27	38.5	16
35.5	28	37.5	16
35.5	27	38	14.5
35.5	27	38	15
35.5	27	36.5	16
35.5	27.5	39.5	15.5
35.5	26	37.5	17
35.5	26	37.5	15.5
35.5	26.5	35.5	14
35.5	26.5	38	15.5
35.5	25.5	36.5	15.5
35.5	25.5	39.5	16
36	25	35.5	16
36	26.5	37	15.5
36	28	41.5	15
36	28	39.5	15
36	28.5	38.5	14
36.5	27	38.5	14.5
37	27.5	38	16.5
37	27.5	41.5	16.5
37	28	39	16

MEASUREMENTS OF COLLEGE FRESHMEN SAMPLE
(continued)

Bust	Waist	Hips	Back waist length
37	27.5	39.5	16.5
37	28.5	43	17
37	28.5	39	15.5
37	30	40	15.5
37	30.5	41	17
38.5	31	40.5	15.5
40	29.5	39	16
43.5	34	43	16.5

AVERAGE FOR COLLEGE FRESHMEN SAMPLE

Number	Bust	Waist	Hips	Back waist length
9	31	23.5	34.2	14.8
15	32	23.9	34.9	15.2
31	33	25	35.9	15.3
35	34	25	36	15.4
26	35	27.7	36.9	15.5
16	36	26.8	37.9	15.4
9	37	28.3	39.9	16.1
1	39	31	40.5	15.5
1	40	29.5	39	16
1	44	34	43	16.5
144 TOTAL				
24	31-32	23.8	34.6	15.1
66	33-34	25	36	15.4
42	35-36	27.4	37.3	15.5
9	37-38	28.3	39.9	16.1
2	39-40	30.3	39.8	15.8
1	43-44	34	43	16.5

AVERAGE FOR SAMPLE AS A WHOLE

Number	Bust	Waist	Hips	Back waist length
2	27	22.5	30.5	13
9	28	22.9	30.2	14
6	29	22.9	31.8	15.3
23	30	24.1	32.1	14.7
37	31	23.9	33.1	14.9
65	32	24.2	34.3	15.5
71	33	25.1	35.3	15.4
79	34	25.4	36	15.5
46	35	27.1	36.8	15.4
33	36	27.2	37.6	15.5
20	37	28.5	39.1	15.7
4	38	31.3	39.9	15.7
4	39	32.7	40.5	15.5
2	40	28.5	38.8	16
1	42	32.5	40	16
1	43	36	45	16
1	44	34	43	16.5
404 TOTAL				
11	27-28	22.8	30.3	13.9
29	29-30	23.9	32	14.8
60	30-31	24	32.7	14.8
102	31-32	24.1	33.9	15.2
150	33-34	25.3	35.7	15.5
79	35-36	27.1	37.1	15.5
24	37-38	29	39.2	15.7
6	39-40	31.3	39.9	15.7
1	41-42	32.5	40	16
2	43-44	35	44	16.3

SIZING CHART FOR COMPANY A

	Size 10	Size 12	Size 14	Size 16	Size 18	Size 20	Size 22
Bust	27-28	29-30	31-32	33-34	35-36	37-38	39-40
Waist	22-23	23-24	25-26	27-28	29-30	31-32	33-34
Hips	32-33	33-34	35-36	37-38	39-40	41-42	43-44

SIZING CHART FOR COMPANY B

	Size 4	Size 6	Size 8	Size 10	Size 12	Size 14	Size 16	Size 18	Size 20	Size 22
Bust	24	26	27	29	30	32	34	36	38	40
Waist	19	21	23	24	25	26	28	30	32	34
Hips	27	29	31	32	35	37	39	41	43	46

SIZING CHART FOR COMPANY C

	Size 4	Size 6	Size 8	Size 10	Size 12	Size 14	Size 16
Bust	27-28	29-30	30-31	31-32	33-34	35-36	37-38
Waist	22-23	23-24	24-25	25-26	27-28	29-30	31-32
Hips	31-32	33-34	34-35	35-36	37-38	39-40	41-42

	Size 18	Size 20	Size 22	Size 46	Size 48	Size 50	Size 52
Bust	39-40	41-42	43-44	45-46	47-48	49-50	51-52
Waist	33-34	35-36	37-38	39-40	41-43	44-46	47-49
Hips	43-44	45-46	47-48	49-50	51-52	53-54	55-56

GOVERNMENT STANDARDS SIZING CHART*

	Size 8	Size 10	Size 12	Size 14	Size 16	Size 18	Size 20	Size 22
Bust	31	32.5	34	35.2	37	39	41	43
Waist	23.5	24.2	25.1	27	28.5	30.5	32.5	34.5
Hips	32.5	34	36	38	40	42	44	46
Bwl**	15.13	15.25	15.5	15.63	15.88	16	16.25	16.38

*Regular height, average hip.

**Back waist length.

PATTERN COMPANIES STANDARD SIZING CHART*

	Size 10	Size 12	Size 14	Size 16	Size 18	Size 20	Size 40	Size 42
Bust	31	32	34	36	38	40	42	44
Waist	24	25	26	28	30	32	34	36
Hips	33	34	36	38	40	42	44	46
Bwl**	15.75	16	16.25	16.5	16.75	17	17.13	17.25

*Misses and women.

**Back waist length.