

**Apparel Product Development for the Plus-sized Tween and Teen Market**  
**Project No. S04-AC01 (Competency: Management Systems)**  
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**Project Team**

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**Abstract**

This research investigates the physical and social-psychological dimensions of demand for apparel by tween girls (aged 9-14), particularly the growing niche market of those who are overweight and obese. Sizing options for female adolescents are not based on any current anthropomorphic data that reflects the body size and shape changes driven by puberty and weight gain. Tweens are regarded as a significant market. Appearance and clothing are important to them, affecting their identity and social relationships, but there is little knowledge of the links between their body images, their emotional needs for desirable clothing styles that physically fit their bodies, and the influence of significant others on these links. In the project's first year, data were gathered from 41 pairs of girls (segmented into younger/older and normal/plus size groups) and their mothers through body scans, questionnaires, and focus group discussion. In Year 2 more body scan input and analysis is being gathered, and in Year 3 a national survey is planned.

**Goal Statement**

One competitive strategy suggested for coping with the pervasive change facing the US apparel industry is the need to develop niche markets. Current data indicate that Americans are larger in physical stature and heavier than previous generations. Through SizeUSA, an anthropometric research study conducted by [TC]<sup>2</sup> using 3-D body scanning, apparel product developers have better insight into sizing for American adults. Sizing specifications for an appearance-focused age group, tweens and young teens, have not been addressed in the gathering of body scan data nor in the accumulation of insights (within the public domain) into sizing-related consumer issues from the adolescents' and parents' perspectives. This project has a three

year research program to understand the social, psychological, and physical parameters affecting product development and marketing to ages 9-14, with an emphasis on the niche market for overweight and obese tween girls.

The research team seeks answers to: 1) What are the physical and psychological characteristics of young females ages 9-14 who are overweight or obese in comparison to their normal weight peers? 2) Where is the market potential for developing apparel products for this niche market? 3) How should sizing categories be developed within this range of ages? The research team expects to define the market potential, understand sizing and fit problems, and develop guidelines for sizing for overweight and obese females reflecting body shape, social-psychological needs, and shopping behaviors.

The research will provide apparel designers and product developers, marketing personnel, and retail executives with information about this niche market with respect to body shape, sizing and fit problems, and clothing needs and wants. Understanding size and body shape and the related social and psychological issues will lead to identification of market voids providing apparel to match the bodies and clothing preferences of this age range.

## **Knowledge Base**

### **Overweight Tweens and Sizing**

To be successful, niche markets must possess current demographic and psychographic profiles of targeted consumers. Trend watchers observe that the youth market is getting younger, and tweens are one of the fastest growing demographic segments. Lettieri (Neider and Figueroa, 2003) noted that there are 2.7 million tweens, and they spent more than \$14 billion annually on clothing. Some marketers have forecast that the current tween cohort's impact on the marketplace will be similar to their baby boomer parents (Paterson, 2003). Definition of these young consumers varies from lows of 6 to highs of 16, but most often centers on the 8 or 9 to 13 or 14 age range (Rose, 2003, August 15). Tweens are seen as having their own money to spend, influencing family consumption, and responding to their upbringing within the baby boomer consumer culture (Patterson, 2003). A recent *Time Magazine* cover story (August 8, 2005) about 13-year-olds suggested that although this age group is exposed to more adult images than their parents, their behaviors are more restrained.

Because tweens do not conform to traditional age segments, NPD's Russell noted in 2003 that they present difficulties for older generation apparel marketers. They are of major interest, but there is little, up-to-date non-proprietary or scholarly research relating anthropometrics and self-image to apparel sizing for adolescents and especially for the increasing numbers of plus-size adolescents. Existing medical profiles indicate epidemic numbers of overweight and obese youth. Worries about the health impact of the growing incidence of overweight and obese children and adults have risen to the point that the topic is frequently addressed in the news media. Along with being larger in size, tweens, like the population as a whole, are more ethnically diverse. Diversity presents other challenges to specifying sizing. Although plus or larger sizes have long been available for adults, they historically have been less visible or invisible for teenagers and offered only in very limited styles (e.g., jeans) for children.

Traditional industry size categories that would likely be purchased by tween girls begin with the "girls" category, in which some manufacturers offer slim and plus versions, particularly of basic items that are less touched by fashion. Historically, a few size categories sought to bridge the developmental gap to teenage figures, but today, after "girls," the next major size category is "juniors," which theoretically is designed for the developing or just developed female figure, and might be purchased for the first time by older tweens. The "junior" category usually has not offered plus-size variations.

Scheuer (National Retail Federation) reported that industry groups do not currently track sales in the plus-size teen market (Quigley, 2002). To produce apparel to fit tweens, product developers now simply tweak dimensions for the pre-pubescent girls category or the more mature junior sizing. Some companies have added sizes to the girls' range (7-16) normally offered. For instance, Talbots Kids and Limited Too both have sizes 18 and 20 for girls. JCPenney offers plus sizes for girls that extend to a 20 ½. Existing industry size charts advertising fit for plus-sized tweens range reveal that each company uses a unique set of body measurements. There is little consistency among producers and with current ASTM standards (Quigley, 2002; Russell, 2002). Once a set of measurements is established, grade rules for expanding to additional sizes seem to assume that all plus-sized tweens get taller and heavier for each graded size. There is, however, no anthropometric data set that could confirm that.

### **Tweens and Body Shape**

Size specifications for young consumers were not derived from anthropometric studies. Adequate, up-to-date data continue to be lacking. Tween girls particularly fit the phrase, "moving target." Like all adolescents, they are growing. More than boys, however, their shapes are changing as they move towards, through, and beyond menarche. Although menarche may be the most obvious symbol of a girl's transition towards womanhood, puberty begins changing her shape and adding weight prior to this one time event (Koff, Rierdan, & Silverstone, 1978). Both occur during the tween years.

Highlighted as far back as the ancient Greeks and discussed in the last century by scientists in a variety of fields, size and shape may not be the same thing. The same shape can have different sizes, and one size can have different shapes. Research by Pisut (2002), Alexander (2003), and Fu (2004) using body scan data confirms that there is no standard adult female body shape, but, rather, three dominant figure shapes – hourglass, rectangular, and pear. Overall adult female body shape is complicated by diversity in the shapes of component parts, e.g., hip shape, bust prominence, torso shape, buttocks shape, and shoulder slope, which impact the fit of a garment. Young, developing females have not been studied to understand their body shapes.

### **Tweens, Body Image, and Clothing**

Along with the physical changes that mark puberty, tweens encounter emotional stresses that come with maturation and identity formation. Appearance is important; self-image plays a role in the development of a healthy body image and self-concept. Obesity has a negative impact on self-image. One medical study (Brown, 2003, April 9) reported that children diagnosed as obese had lower self-image scores than children who were cancer patients on questions relating

to social functioning. With body image strongly connected to body size and shape, girls report significantly more dissatisfaction with their bodies than boys (Paxton, Wertheim, Gibbons, Szmukler, Hillier & Petrovich, 1991). Dissatisfaction is related to an adolescent's ideal; past research found that African-American adolescents and preadolescents chose a larger ideal body size than their white peers (Collins, 1990; Wilson, Sargent & Dias, 1994).

Over the last three decades, concern about eating disorders among adolescent females has driven most of the research into body image. Psychologists, educators, and the medical community have tackled the issues of how the body is perceived, what ideals are, how dissatisfaction is expressed, and what factors influence the development of disorders. In the latter case, one identified culprit has been the prevalence of very thin fashion models portrayed in magazines and other venues. Although eating disorder researchers' objectives were and are to resolve the health issues of extreme thinness, the research measures created can be applied to all adolescents, including the overweight and obese.

Like body image, the importance of appearance and clothing to adolescents' peer relationships, social participation, perceptions of attractiveness, and self-esteem go back decades. At a time when tweens are establishing their identity and developing personal style preferences, as well as relating to or feeling separated from peer groups, overweight teens, whose body image or satisfaction may be lower than their average size peers, cannot get properly fitted in apparel that is age-related. Lack of conformity singles them out and is damaging to self-concept. Francis (1992) found that high school students who felt deprived of clothing like their peers had lower social participation and lower social competence (indicators of self-esteem) scores.

Health care professionals say they would welcome having a greater selection of apparel for larger children (Fashion for Larger-sized Teens, August, 2003). Evidence suggests that when the need for attractive, well-fitted apparel is met in the adult market, this market segment is loyal. A study by Simmons Market Research Bureau reported in American Demographics noted that heavier consumers are more likely to go out of their way to seek stores that carry their favorite brands and have above average service (Gardyn, 2003).

### **Tweens and Their Mothers**

Seminal research (Sorensen & Stunkard, 1993) with families suggested a relationship between biological mothers and their offspring regarding obesity. Mothers' influence on their daughters attitudes towards their bodies has been found in varied studies. Abramovitz and Birch (2000) found that girls as young as five had weight concerns when their mothers had weight concerns. In their sample, those young girls whose mothers dieted were much more likely to have ideas about dieting. Collins (1990) reported that in her large sample of children in 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> grades, many girls did not want other children to know how much they weighed.

Mothers also are involved in apparel purchases for this age group. May and Koester (1985) found that 9-12 year old girls usually shopped with a parent; sometimes or half the time parents were asked to help decide or made the final clothing choice. A previous study (Moschis, Moore & Stephens, 1977) suggested a relationship between social class and purchasing independence from families; lower class adolescents had greater independence than their middle and upper class peers. Anecdotally, few adult women can probably not remember experiencing

clothing selection conflict with a parent. In a recent poll, however, 90% of the 13-year-olds reported that they had good or excellent relationships with their parents (*Time*, August 8, 2005).

### **Research Accomplished May 2004 to September 2005**

This study initiates research focused on sizing, consumer characteristics and market emphasis for the range of niches clustered in the girls "tween" and young teen market, focusing especially on girls needing plus-sizes. Project launch will incorporate exploratory and basic research to build the foundations for successful apparel development for overweight and obese tween and young teen girls aged 9-14. The approach will tackle the problem of integrating understanding of physical shape and social-psychological dimensions by exploring body shape, body image, and apparel fit and style issues through small focus group sessions with tweens and young teens and their mothers.

### **Procedure**

Four age and size specific focus groups were held at [TC]<sup>2</sup> on October 9 and 30, 2004. On October 9, a morning session brought in 11 girls aged 12-14 representing the normal size range, as well as their mothers. An afternoon session was attended by 11 plus-size girls and their mothers. The same morning-afternoon pattern was repeated on October 30, except that the girls were aged 9-11 (10 normal size and 9 plus-size). Assignment to normal and plus sizes was determined by applying the Body Mass Index guidelines approved by the U.S. Center for Disease Control. Children are defined as overweight or at risk of being overweight when their BMI scores reach the level of at least the 85<sup>th</sup> percentile in their age category.

Each girl and her mother had her body scanned. Following the procedure of scanning the mother before the daughter reinforced for her that it was fast, easy, and safe. Each girl and her mother separately completed related but different questionnaires probing body image and attractiveness issues, feelings about clothing, and apparel selection experiences, as well as demographic information (from the mothers). Several instruments embedded in the questionnaires were adopted and adapted from published research (Blyth, Simmons & Zakin, 1985; Cash, 2000; Levine, Smolak & Hayden, 1994; Maloney, McGuire, Daniels & Specker, 1989; May, 1982). Each girl was given a selection of several current magazines (e.g., *Teen Vogue*) or catalogs (Limited2) to use for cutting pictures and making a collage of an outfit she would buy, and she was asked to identify what price she would pay for the pieces. Finally, the girls and their mothers participated in separate 1-1½ hour focus group sessions. For the questionnaires and the focus groups, mothers and daughters were each assured that their answers would not be revealed to the other.

### **Sample**

The subjects were predominantly Caucasian (61%) and African-American (29.3%). On average, the younger girls were in the middle of their 10<sup>th</sup> year and the older girls in the middle of their 13<sup>th</sup> year; the two categories were not skewed to the higher or lower ends of their age groups. In younger and older groups, the BMI scores of plus size girls averaged approximately

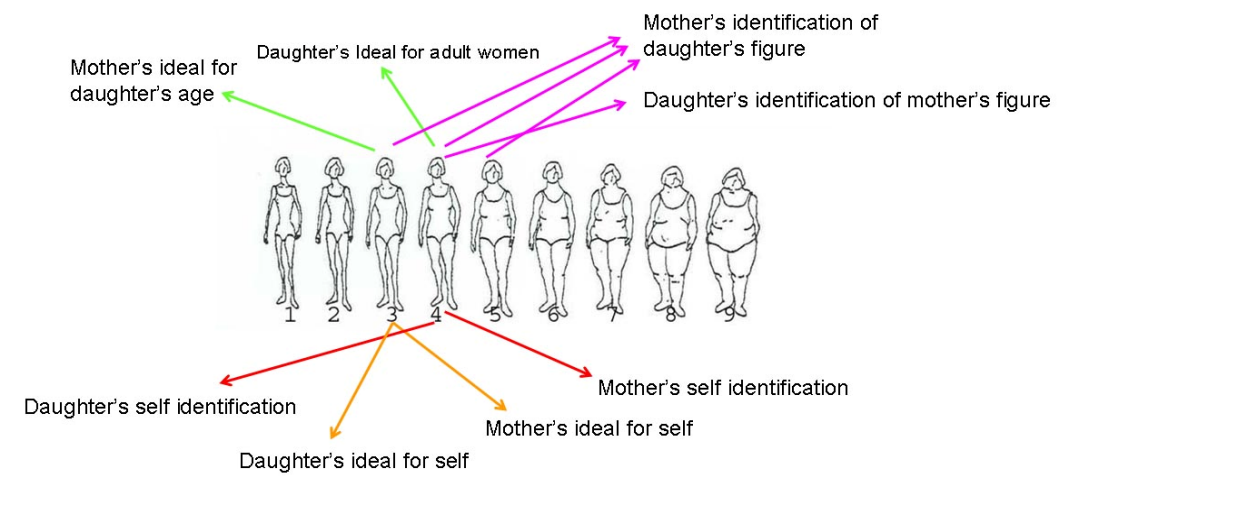
ten points higher than the normal size girls. Just under half of the girls (46%) were reported by their mothers to have reached menarche. Only two of the younger girls, both plus sizes, were in this group; five of the 22 older normal and plus size girls had not begun menstruating.

The younger girls were mostly in the 4<sup>th</sup> and 5<sup>th</sup> grades, and older girls mostly in the 7<sup>th</sup>-9<sup>th</sup> grades. Two participants in each of the age groups were in the 6<sup>th</sup> grade. Three-quarters of the mothers were married; one-quarter of them did not work outside the home. Median income broke at \$75,000 for single income households and was in the \$100,000-\$149,999 range for dual income households. Nearly half had at least a bachelor's degree; 34% had an associate's degree or some college.

### Questionnaire Results

Using a nine-point scale of body sizes (Massara & Stunkard, 1979; Stunkard, Sorenson, & Schulsinger, 1983), girls and mothers each were asked to identify the figure that (1) was their size, (2) their ideal size, (3) the size of the opposite person (mother or daughter), and (4) the ideal for that opposite person. Figure 1 shows the scale and the mean results for all 41 pairs. When comparing plus and normal size girls, the former saw themselves as larger than the latter (respective means of 4.35 and 3.24), and their mothers widened that difference in their perceptions of their daughters' sizes (respective means of 5.10 and 2.9). The normal and plus size girls' ideals for themselves (3.07 and 3.22 respectively) were much closer and slightly smaller than their ideals for adult women (4.11 and 4.02 respectively).

**Figure 1:** 2004 Results Depicted on Stunkard, Sorenson, and Schulsinger (1983) Body Size Scale



Body dissatisfaction was calculated as the difference between actual and ideal. The mean dissatisfaction score for plus size girls was 1.8 compared to 0.23 for normal size girls, and plus size daughters were significantly more dissatisfied with their bodies than their mothers with their own bodies. In another section of each questionnaire, girls were asked if they ever wanted to be

thinner and had ever tried to lose weight. Seventy-six percent wanted to be thinner, 68% had tried to lose weight. The mothers' perceptions were lower; 48% thought that their daughters wanted to be thinner, and 38% thought that their daughters had tried to lose weight.

Girls were asked how frequently different individuals (mothers, fathers, sisters, and friends) helped them to decide what clothes to buy and what clothes to wear, or how frequently they decided by themselves. Fathers were rarely influential in either case. On the other hand, 76% of the girls reported that their mothers were usually or always influential in deciding what to buy. Fewer, 56% reported that their mothers were usually or always influential in deciding what to wear. At least half of the girls reported that they usually or always decided on their own what to buy (54%) and what to wear (61%). Friends were more influential in deciding what to wear than what to buy, and sisters were less important than friends in both situations.

Girls were asked how often they considered the following seven factors when they decided what to wear:

- Clothes that look best on me
- Clothes like those that my friends will be wearing
- Clothes that are comfortable
- Clothes that are my favorite color
- Clothes that are the newest fashion
- Clothes with a popular brand name
- Clothes that fit me well

Mothers were asked what they believed their daughters considered. Ranking the mean scores showed that the pairs' top choices were different. The girls indicated that fit was most important, followed by the equal importance of clothes that look best and are comfortable. The mothers thought that the newest fashion was most important, followed by brand name and then look best. Scores for both groups put what friends would be wearing at the bottom. Although it ranked low, the mothers' mean score was significantly higher than the girls.

Girls were asked how often they did not have or could not get the clothes that they would choose to wear for school, doing things with friends, and dressing up. Approximately one-quarter of them said that they usually or always were in each of these situations. Plus size girls felt significantly ( $p = 0.00$ ) more deprived than normal size girls.

### **Focus Group Results**

The mothers' groups were moderated by project co-p.i. Lenda Jo Connell, and the daughters' groups by Jennifer Kerpelman, an Auburn University professor and adolescent development specialist. There were stark contrasts between the discussion content of the mothers of plus size girls and those of normal size girls. The former could not relay any "fun" shopping experiences with their daughters; shopping for clothes was difficult, painful, and nearly always frustrating. Multiple mothers reported that if they could find clothes like those worn by their daughters' peers to fit their daughters, they would buy more. Karen, mother of plus size Brianna (age 10), concluded with:

"It seems that you would think in marketing, as we know society or America, 50% of America is overweight, but yet we still make clothing for when America was in 1960 and

very small...that you know, the statistics are always there that America is 50% overweight, but yet we're still selling low riders for...it's just almost like we're in denial with some things...that America is overweight, but we don't accommodate that. We accommodate it with eating, but we don't accommodate it with apparel."

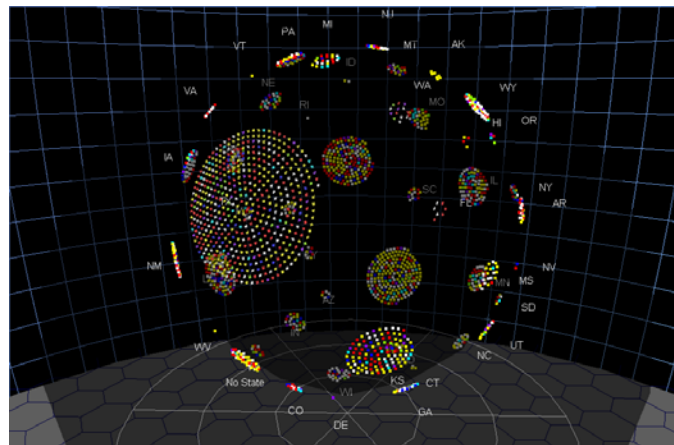
Their daughters thoughts were not as clearly expressed and completely revealing, but the girls expressed sentiments like:

"I think that they should make cute clothes in bigger sizes so other people can wear them and look nice in them, too." (Tyler, age 13)

"[They should] make clothes for people that are stuck in the middle [between] kids clothes and juniors." (Erica, age 10)

All groups of mothers and some daughters, as well, expressed concern about the verbal messages conveyed on girls' garments, skirt and short lengths that were too short to wear to school, and necklines that were too low. Content analysis of the focus group discussions is proceeding using a dynamic new tool, The Starlight Information Visualization System, which can input verbal, visual, and quantitative data and express relationships in visual forms. Figure 2 is an example of Starlight output.

**Figure 2: Starlight "datasphere"**



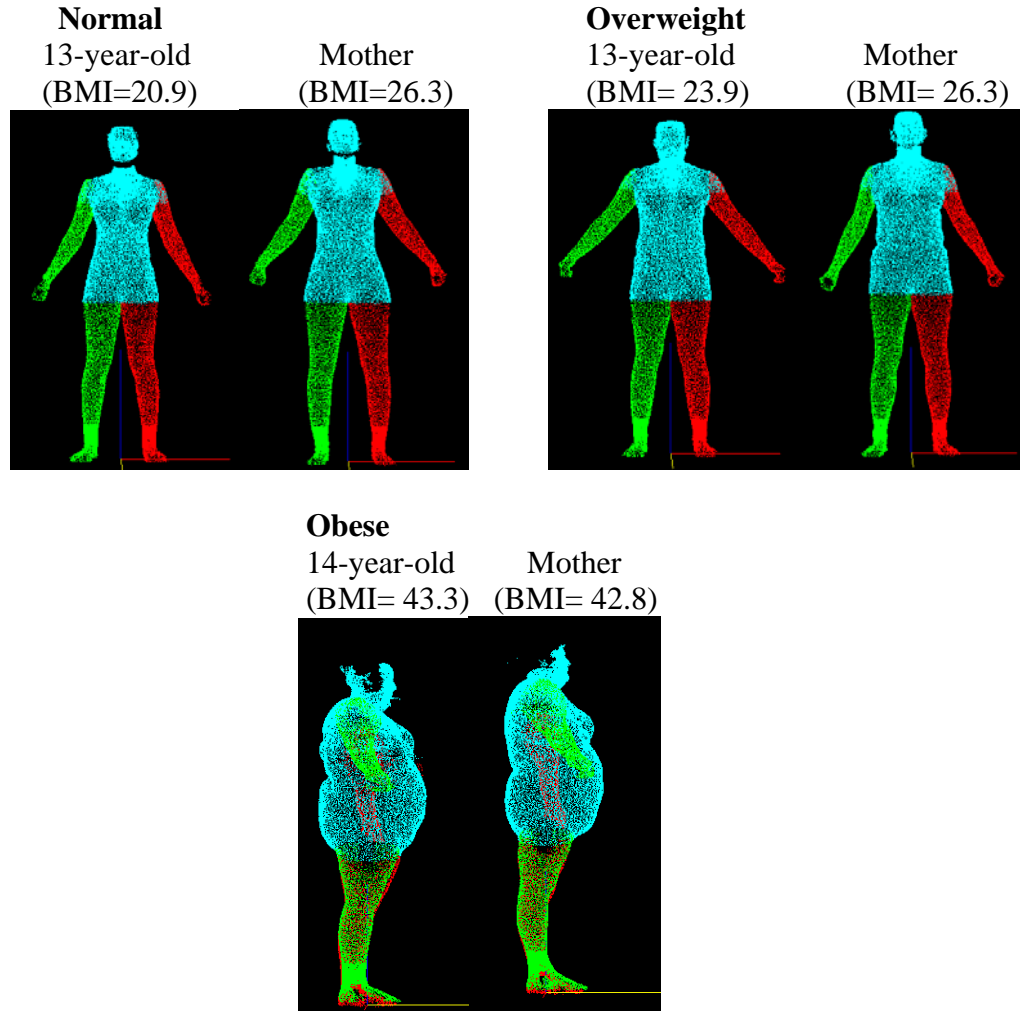
### Body Scans

Although a small sample, the 41 scans of girls over the six-year age range of 9-14 represents the first known set of scans of girls or boys under age 18. As such, it is also the first set of girls paired with their mothers. Figures 3 shows one example each of a normal size, overweight, and obese girl paired with their mothers. These examples show substantial similarity in paired body shapes, although all pairs are not as closely related.

A general assessment of the scans reveals substantial variation in body size, shape, and development of adult female characteristics, even within the more narrow range of each of the four sub-groups. Some of the girls in the plus-size groups were athletes, e.g., field hockey players, who were heavy enough to belong in the group, but whose BMI scores were affected by

the greater weight of muscle mass. Literature on BMI reveals this as one possible limitation to interpreting scores.

**Figure 3: Daughter-Mother Pairs**



**Research Plans: October 2005 to April 2006**

**Body Scan Database**

Year 2 plans focus on gathering more body scan data to serve as the base for building a body shape scale for this transitional age group. Towards that end, the purchase of a [TC]<sup>2</sup> 3D body scanner (including both stationary and portable shells) was funded for this year and has been installed at Auburn University.

The objective of scanning an additional 100 girls is being aided by an Auburn University Outreach grant to begin benchmarking the size of Alabama tween girls, particularly the

overweight segment. Scanning will take place between October and December, extending into January if necessary. Once again, mothers will be encouraged to be scanned along with their daughters, and subjects will be asked to complete a questionnaire.

### **Body Shape Analysis**

Additional scanning will provide approximately 150 scans of girls aged 9-14 to study anthropometrically. Following the procedure used to develop the Body Shape Assessment Scale (BSAS©) for adult females ((NTC project S01-AC27), first pass profiles of whole and component body shape will be developed. The developmental perspective is to evaluate body shape as it impacts the creation of patterns to fit the target market. Analysis of this small sample of normal and plus-sized tweens will form a basis for looking at sizing standards in this emerging market.

### **Industry Contacts to Date**

Along with applying actual body scan data to sizing specifications, a body shape analysis tool enables the relating of behavioral and attitudinal characteristics to physical characteristics. Apparel merchandisers and product developers can better target the market, enhancing their consumer base and yielding positive results for the consumers. Major manufacturers and retailers of children's wear have expressed interest in gathering anthropomorphic information about children through a body scan collection effort like SizeUSA, but because researching children is a sensitive area, no organized attempt has been made until this project. Collecting more scan data will multiply the availability of anthropomorphic information on tween girls.

Participation in the NTC Annual Forum (March 2005) and a Size USA conference at [TC]<sup>2</sup> (June 2005) generated contacts with Invista, JCPenney, Sara Lee, LLBean, Wrangler, Jockey, Target, Levi Strauss, Sears, and Archetype Solutions. Researchers are also linked to alumni working in children's wear development at Dillard's. For the focus groups, Limited Too provided catalogues (combination catalog and magazine). Early results were shared with Nike product developers through a seminar at company headquarters (November 2004).

### **Graduate Students and Their Research Topics**

Katie Brock: Analysis of focus group discussions using Starlight (master's thesis)

Angelina Calabro: Applying 3D body scan data to jeans fit for tween girls (master's thesis)

Seunghee Lee: Relationships between mothers and daughters, and between body image and clothing behaviors (doctoral dissertation)

Melissa Manuel: Using 3D body scan measurement data and shape assessment to build anthropometric profiles (doctoral dissertation)