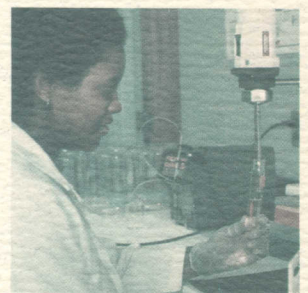


RESEARCH EXCELLENCE
HUMAN SCIENCES AT AUBURN UNIVERSITY



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Research in the School of Human Sciences focuses on quality of life issues for individuals and families in Alabama, throughout the nation, and around the world. We have established a faculty alliance for research excellence dedicated to improving the human condition. Our research scientists address critical interpersonal concerns and work to solve the complex problems surrounding the family and its near environment. Leading-edge research in nutrition, food, and health, complemented by equally significant work on individual and family development and consumer and resource manage-

ment issues, exemplifies faculty accomplishments. Much of this research is done through the Alabama Agricultural Experiment Station in a partnership approach that has served Alabama well for many years. The Human Sciences research agenda calls for a commitment to scientific excellence and faculty to serve as academic leaders for the 21st century.

June M. Henton
Dean

Arthur W. Avery
Associate Dean for
Research

This is a publication of the Auburn University School of Human Sciences

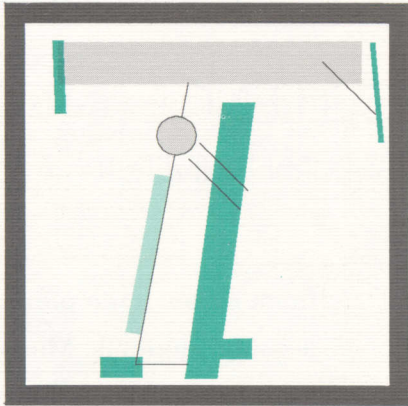
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Alliance for Excellence



he fabric of a community is woven from

many economic and social threads which provide support and comfort for its residents. In some towns, the supporting fibers come from numerous sources and offer strength in their diversity. But it is common in Alabama, particularly in rural areas of the State, for a single business or industry to serve as the common thread that binds a community together. While these one-industry communities tend to be tightly-knit, their dependence on a single enterprise can also make them vulnerable to financial problems within the industry.

That scenario has been well documented in Alabama, especially in the textile and apparel industry, the single largest employment sector in the State. Each of Alabama's 67 counties contains at least one textile or apparel plant, and this industry provides more than 25 percent of

the State's manufacturing jobs. When foreign competition and other economic factors began to cause severe financial problems for the industry in the early 1980s, the repercussions were felt in many of those small communities which relied so heavily on the economic strength of their local textile or apparel plants.

"We knew the economic impact of these problems was significant, but we are just beginning to understand the effect on the economic base of the community and the lives of the people who work in and rely on these industries," says Dr. Carol Warfield, a consumer affairs specialist and an expert in the areas of textiles and apparel.

Warfield, who is coordinator of Industry Relations and an associate professor in the Department of Consumer Affairs, began to evaluate the consequences of difficulties in the textile and apparel industry and to develop a strategy which could help alleviate current problems and head off future ones.

"Major retailers are increasingly saying they want to buy more products domestically. Alabama, with its many textile and apparel companies, has a

"Alabama, with its many textile and apparel companies, has a unique opportunity"

unique opportunity to capitalize on this trend," she explains. Recognizing that potential, Warfield and her associates designed a broad-based plan which could help the State's textile and apparel companies take advantage of these strengths and also garner help from outside sources. "Cooperative

action by state and local governments, universities, and industry groups formed the base for a network of assistance to support textiles and apparel," she adds.

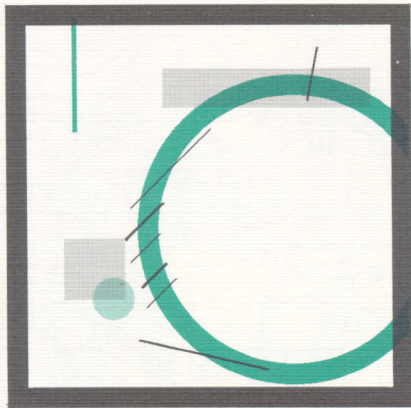
The research efforts of Warfield and her associates focus on assessing the needs of Alabama's apparel industry, then developing cooperative programs to meet those needs. The establishment of linkages among Alabama producers, as well as between these producers and retailers, has been a major result of this cooperative action. In addition, educational programs have



been developed to help Alabama's apparel companies become more competitive.

The advances made in the industry have been significant since this effort first began, but Warfield notes that more work will be needed before many of these issues can be resolved. Future research and development programs will build on established networks to address industry's needs and, eventually, to help provide a blanket of security for Alabamians and their communities.

Alabama's textile and apparel industry requires both high-tech equipment and a finely tuned marketing initiative.



Childhood is a time to test social waters and learn the intricacies and responsibilities of human relationships. For those children who find success in the social arena, it is a time to experiment with skills which will also be important in adult relationships. But for those children who find it hard to cultivate friends or even casual playmates, childhood can be a time when social and emotional development are hindered or damaged.

“Research is beginning to document how important friendships are to children,” says child researcher Dr. Jacquelyn Mize. Not only are children without friends lonely and often depressed, they also frequently experience negative consequences later in life. Once these children reach adolescence and adulthood, they are at risk for such problems as truancy, delinquency, dropping out of school,

and mental health difficulties. In fact, some studies indicate that the quality of children’s relationships with peers is the best predictor of later adjustment.

Friends help children learn the skills and rules necessary for operating in work, family, and friendship relationships—skills like providing mutual support, negotiating, and keeping secrets. According to Mize, recent work suggests that “children who don’t learn the skills of friendship, such as negotiation and providing support, may have trouble being good friends or successful marriage partners later in life.”

Mize, an assistant professor in the Department of Family and Child Development, has been contributing to the base of knowledge on children’s social skills for the past eight years. As a former preschool teacher, she observed firsthand the pain that being rejected by classmates can cause even for very young children. Based on her own research and research conducted by others, Mize theorized that preschoolers could learn the social skills necessary for getting along with peers.

“Research is beginning to document how important friendships are to children”



Observing and engaging in play help preschoolers develop essential social skills that will serve them for a lifetime.

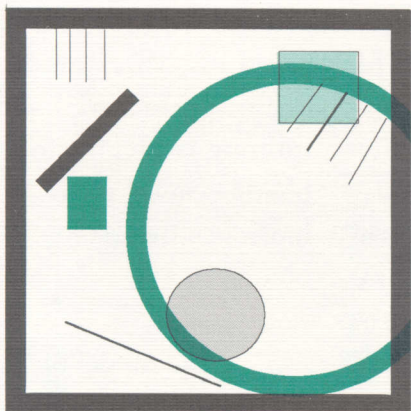
To test this theory, Mize began working with preschoolers who had been doing poorly in social situations. Some of these children were extremely withdrawn and others were not accepted by their peers because of

their aggressiveness. The research involved dividing the children into two groups, one receiving social skills training and the other only receiving supportive adult contact. Those children in the social skills training group learned friendlier, more prosocial ideas of how to solve social problems. Following training, for example, children were more likely to suggest a way of sharing a toy rather than grabbing for it. Also, these

did not improve on any of these measures. This showed that children who received social skills training were able to retain and build upon the skills, resulting in more positive relationships with others.

The model of training developed by Mize has been used in a number of preschool classrooms to help children learn less aggressive and more positive ways of dealing with peers. In fact, Mize sees potential for her research and training model to form the basis of preschool and kindergarten programs designed to prevent more severe interpersonal problems in later life. By teaching children how to establish and maintain relationships and negotiate disagreements, it may be possible to prevent many of the problems in adolescence and adulthood that confront people who were unable to form rewarding peer relationships during childhood.

same children more than doubled their use of the social skills in classroom interaction with peers, and they became better liked by other children. In contrast, the group that only received supportive adult contact



calorie count-

ing has become something of a national pastime as weight-conscious Americans strive to maintain or regain trim bodies. Believing that sacrifice is the only way to win the war on weight, many dieters will pass up such delights as crusty rolls and fluffy baked potatoes to lose a few pounds.

Though calorie counting is not restricted to gender, women are notoriously committed to cutting calories, often leaving entire food groups out of their diets to achieve their weight goals. And studies have shown that female athletes are even more scrupulous about their calorie intakes, displaying a tendency to consume extremely low calorie levels.

While calorie counting is an undeniably effective dieting tool, experts warn that those who trade nutrition for shape may be eliminating their greatest allies in

the struggle for fitness. For example, the dieter who gives up carbohydrates to shed unwanted weight is actually taking away a vital fuel for the body, a fuel which can help the body endure the rigors of dieting, exercise, and other tasks of everyday life.

“Carbohydrates are brain and muscle food,” explains nutritionist Dr. Bob Keith. By excluding these foods from the diet, Keith says, weight watchers are depriving their bodies and minds of the very fuel which can help them function effectively.

Keith, an associate professor in the Department of Nutrition and Foods and a specialist on diet and exercise, began studying the carbohydrate needs of female athletes after a study of male athletes showed significant correlations between carbohydrate intake and endurance. No similar studies had been conducted with females, yet women could likely benefit more than male athletes who already consumed fairly normal levels of carbohydrates.

Using female endurance bicyclists, Keith tested the women’s endurance levels on low, moderate, and high carbohydrate diets. He found that the partici-

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pants were able to as much as double their riding times by increasing carbohydrate levels in their diets. Keith also studied a previously uninvestigated facet of this research, the effect of carbohydrates on the mind. By monitoring the emotional responses of women on these varying carbohydrate levels, Keith found that women on moderate to high carbohydrate diets displayed more vigorous and positive emotions than those on low carbohydrate diets.

For female athletes, the findings of this study are extremely helpful. Increasing carbohydrate levels in their diets, even if

they keep their calorie counts low, can give these athletes and their male counterparts a new tool to help them improve both their physical and mental performances. But Keith notes that



Research on human dietary needs provides vital information which can significantly enhance the performance of athletes and other physically active people.

everyone, whether they are competing in the business rat race or trying to keep up with the hectic pace of home life, can use this information to improve their endurance and attitudes. As a matter of

fact, this and other nutritional information gathered through research can help lead the entire population to a life of improved health and vitality.



trip through

any clothing store will confirm cotton's popularity among today's consumers. This natural fiber is used in everything from blue jeans to formal wear to lingerie, yet there is one market where it is conspicuously absent—children's sleepwear. Though few fabrics are as well-suited for sleepwear as cotton, economic and safety factors have virtually eliminated its use in children's night clothes.

According to textile and consumer affairs specialist Dr. Ian Hardin, cotton was the fabric of choice for children's sleepwear until the early 1970s when youngsters' bed attire was targeted for flammability regulations. Surveys had identified young children and the elderly as high risk groups for burn injuries, especially when wearing loose-fitting garments like night clothes.

"Cotton didn't lose this market because it could not be made flame retardant," Hardin states. "It lost out because treating the fabric greatly increased the cost of the garment, sometimes as much as 25 percent or more, and because of problems related to phosphate-free detergents."

Phosphate-free detergents, developed to help combat water pollution, also caused some treated cotton to lose its flame-retardant qualities after several washings. When this problem was discovered, researchers began to study the cause by exploring the burning process, or pyrolysis, of the fabric. They found a chemical mechanism so complex that many manufacturers gave up the quest and abandoned cotton for man-made fibers that didn't lose their flame retardant characteristics in the wash.

Hardin, an associate professor in the Department of Consumer Affairs who has been studying textile issues for many years, has addressed pyrolysis again from a different perspective. Instead of analyzing treated cotton, Hardin is first trying to understand the process of pyro-

"Treating the fabric greatly increased the cost of the garment, sometimes as much as 25 percent or more"

lysis of cellulose. He explains that long chains of sugars form linear molecules of cellulose which are the basic components of many natural fibers, including cotton. By studying cellulose's chemical reaction to pyrolysis, Hardin hopes to find out how heat breaks it into smaller particles which then escape from the material's surface in gaseous form and ignite.

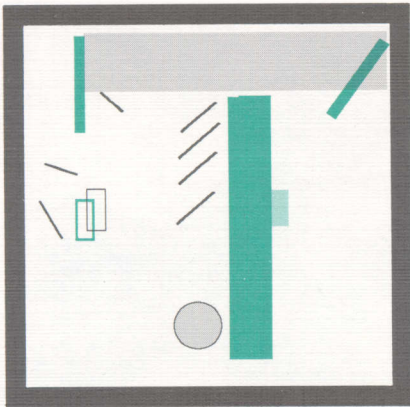


Starting on this rudimentary level and building on that knowledge, Hardin believes the mystery can be unraveled. "Once we determine the basics of this process, we can add other chemical factors, such as flame-retardant treatments, to see what chemical changes occur," he says. "If we knew exactly what was going on chemically to cause this reaction involving phosphate-free detergent products and treated cotton, we could probably chemically design a new type of flame retardant to solve the problem," he adds.



If this back-to-basics approach is successful, cotton sleepwear may soon be available to all ages, and cotton producers may find an additional market for their product.

Improving safety in children's sleepwear is a central concern of Auburn research scientists.



he first year of life

is a period of unprecedented growth, punctuated with first smiles, first words, and first steps. Each of these milestones signals the development of physical skills essential for a happy, healthy life. But other, less visible skills also are being developed—the social and emotional skills that are equally vital to a child's future.

How important are these skills? Very, says Dr. Brian Vaughn, a child development researcher who has been studying the emotional and social development of young children since 1975. Vaughn notes that the skills and attitudes formed in those early months and years are directly related to the evolution of sound mental health as an adult. And, he adds, parents and caregivers play a critical role in that development. "We have found that those parents who are more aware of their children's needs (both physical and emotional)

tend to have children who are more mentally healthy," says Vaughn, a professor in the Department of Family and Child Development.

Vaughn's research has identified certain characteristics in children which are good indicators of this development and disprove popular notions about child development. For instance, clinging, whining infants will not necessarily become spoiled children. "All babies cry, but some stop more quickly when they are comforted," Vaughn says. "Our research has shown that these tendencies relate strongly to the child's relationship with the parents."

He notes that precociously independent children, children who draw away from or do not respond to their parents at an early age, often have histories of poor quality parent-child interaction. These children are often found in families where the parents are not available to respond to the child's needs or are unpredictable about doing so. Such children often become overly dependent later in life, he adds.

"All babies cry, but some stop more quickly when they are comforted"

Vaughn has also studied social interactions between young children and, through his research, has developed a new indirect method of measuring social skills and interactions. Previously, the best way to evaluate these social structures and interactions was to question the children about their playmates and their social preferences. But these tactics tend to invade a child's time and privacy. Vaughn found that, by following a child's gaze, an observer could accurately identify the social structure of a play group.

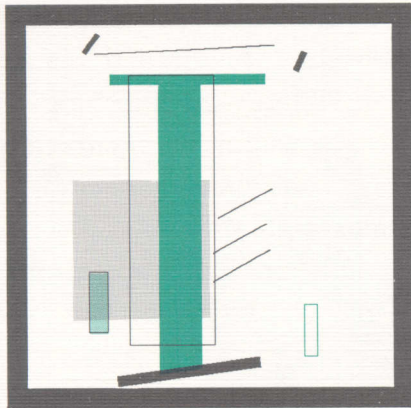
"We discovered that the children who were looked at a lot by other children showed more skilled social behavior and were more well liked," he explains. "Using visual regard to evaluate the social structure of a group of children, we can gain reliable social information about a group."

This noninvasive method may soon be used by Vaughn and fellow child development experts to learn more about the social interactions and skills of children.

Positive parent-child interaction is an important factor in the successful emotional development of infants.

Ultimately, this information can be used by parents, caregivers, and others to help ensure the healthy social and emotional development of children and provide them with a strong foundation for a happy future.





n an age where eating right means eating light, many people have been taking advantage of fish as a source of healthful nutrition. The popularity of fish continues to escalate as researchers find more evidence that certain fish oils may help reduce the risk of heart attack.

Several years ago, scientists noticed a low incidence of heart disease among people who consumed large quantities of cold water, marine fish, such as salmon and cod. Studies showed that oils of these fish contained omega-3 fatty acids, dietary fats that may influence the body's eicosanoid system. Eicosanoids are part of the body's cellular communication system, sending messages from one cell to another. Eicosanoids in the circulatory system include prostacyclin and thromboxane which exist in a delicate balance to help promote proper blood flow and clotting in the body. An imbalance of these

eicosanoids can cause cardiovascular problems. Omega-3 fatty acids influence that balance by altering the chemical structure of prostacyclin and thromboxane and by improving blood flow.

Now scientists, including Auburn University nutrition researcher Dr. Margaret Craig-Schmidt, are studying the effects of omega-3 fatty acids on other body systems.

"If fish oils can help the cardiovascular system, they may have a beneficial effect on other systems as well," says Craig-Schmidt, who began studying dietary fats while in graduate school. "We want to see what effects fish oils have on the production of eicosanoids in the respiratory system and the retina, and in the treatment or prevention of breast cancer."

Craig-Schmidt, an assistant professor in the Department of Nutrition and Foods, explains that respiratory and retina research will focus on neonatal development. Preliminary research indicates that omega-3 fatty acids may be necessary for the proper development of the retina in infants. Studies have already shown that newborn infants placed in incubators may suffer

"If fish oils can help the cardiovascular system, they may have a beneficial effect on other systems as well"



Research into the effects of dietary fats provides answers to health problems plaguing both children and adults.

damage to their lungs and retinas. Dietary omega-3 fatty acids could protect against this damage and possibly aid in the normal development of these systems.

Using laboratory animals as neonatal models, Craig-Schmidt is studying the effect of omega-3 fatty acids on damage and development of eyes and lungs. "We may find that fish oils can be added to infant formulas or to the diets of lactating mothers so the omega-3 fatty acids are available to infants," she says.

Another phase of Craig-Schmidt's fish oil research could benefit adults as well. This study is comparing the influence of corn, fish, and coconut oil on cancer in laboratory animals to determine if these oils affect the incidence and deadliness of breast cancer.

Craig-Schmidt noted that omega-3 fatty acids are found in other foods, such as vegetables and seed oils. Her research has already shown that people in the United States consume 10 times

more of the type of omega-3 fatty acids found in vegetables than the type found in fish. "If the influence of these omega-3 fatty acids from plants is similar to fish oil, we may find an alternate source of omega-3 fatty acids that would be particularly attractive to people who do not routinely consume seafood," she says.

This research will provide new knowledge about the effects of dietary fat on the human body, knowledge that may help control or prevent myriad health problems afflicting both children and adults.



CAROL WARFIELD

Carol Warfield's expertise in textile and apparel science and in consumer affairs takes her all around the world, yet Alabama is still the hub of her career. Warfield, who joined the Auburn staff in 1977, received her bachelor's degree from South Dakota State University and went on to the University of Illinois to earn a master's in textiles and clothing and a Ph.D. in family and consumption economics. She later received the Alumni Award of Merit from the University of Illinois School of Human Resources and Family Studies.

She was lured to Alabama by the State's abundant textile and apparel industry and by the unique blend of textile science and consumer affairs found in Auburn's School of Human Sciences. Warfield, an associate professor and coordinator of Industry Relations for the Department, believed these two disciplines should work hand-in-hand. Her work to preserve and develop the State's textile and apparel industry has earned her worldwide acclaim as an authority on the interaction between the textile and apparel industry and consumer issues. Though she is a regular contributor to national and international publications and conferences, her emphasis remains close to home and her research efforts have benefitted Alabama's textile and apparel industry, as well as the many Alabamians who rely on this industry for jobs.



BRIAN VAUGHN

Brian Vaughn had already received a B.A. in psychology from Arizona State University and was in graduate training in child psychology at the University of Minnesota when he became interested in studying the psychological development of very young children. An advisor who was using video equipment to study infants' social behavior piqued Vaughn's interest in studying the emotional development which occurs during the first year of life. He has since developed that interest into a distinguished career and earned the reputation as an innovative researcher of infant social development.

Vaughn went on to earn his Ph.D. in child psychology from Minnesota and serve as a post-doctoral fellow at UCLA. He came to Auburn as a professor in the Department of Family and Child Development in 1988 where he has continued to explore new, fascinating aspects of infant development. Vaughn serves on the editorial board of *Child Development* and *Developmental Review* and as a reviewer and contributor to many other professional publications. Through his studies, Vaughn has developed ways to monitor the social skills of very young children without invading their privacy. This approach has yielded significant new findings about the social development of infants and the impact that development can have on the healthy emotional growth of children.



IAN HARDIN

A scholarship in textile science not only allowed Ian Hardin to attend college, it also helped him focus his interest in engineering and science on a very specific discipline. Hardin was able to earn his bachelor's degree in textile science from Auburn University through a scholarship funded by a major textile manufacturer. Hardin went on to earn his M.S. in textile engineering from the Institute of Textile Technology in Virginia, his Ph.D. in Chemistry from Clemson University, and serve as a post-doctoral fellow at the Macromolecular Research Institute at the University of Michigan.

While in school, Hardin spent his summers working in the private textile industry but returned to Auburn in 1971 where he now serves as an associate professor in the Department of Consumer Affairs. He has continued to assist private industry as a consultant for such firms as Butterick Publishing Company and West Point Pepperell, Inc. and has also earned acclaim for his research efforts in many diverse areas of textile science. Much of his work has concentrated on cotton, a fiber important to Alabama's agricultural and textile economies. Through funding from such sources as Cotton Inc. and the USDA Agricultural Research Service, Hardin has conducted studies which have helped enhance cotton's performance and improve its acceptance among consumers.



BOB KEITH

Bob Keith grew up loving sports and became intrigued with the importance of nutrition at an early age. When it came time to choose a career, he combined the two interests and has emerged as a leading researcher in the field of sports nutrition.

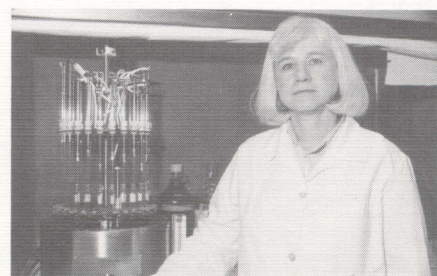
Keith, an associate professor in Auburn's Department of Nutrition and Foods, received his B.S. degree in biology and M.S. in human nutrition from Florida State University before earning a Ph.D. in human nutrition from Virginia Tech. Since joining the Auburn staff in 1983, he has conducted research which has helped identify the nutritional needs of athletes. In addition to his regular contributions to professional conferences and publications, Keith also lends his expertise to popular sport and fitness magazines such as *The Runner* and *American Health*. Keith is also an active member of the Southeastern Chapter of the American College of Sports Medicine and the Sports and Cardiovascular Nutrition Practice Group of the American Dietetic Association. His studies, which have received funding from the American Institute for Cancer Research and the U.S Olympic Committee, have helped identify ways to improve the performance of athletes and nonathletes alike by providing new insights into the influence of nutrition on human performance.



JACQUELYN MIZE

As a preschool teacher, Jacquelyn Mize witnessed firsthand the importance of social development in young children. That experience formed the foundation of her career as a child development expert. A Magna Cum Laude graduate of the University of Georgia with a bachelor's degree in anthropology, Mize went on to earn her M.A. in Child and Family Development from Georgia and the Ph.D. in Child Development and Family Studies from Purdue University.

Since she joined the Auburn faculty in 1984 she has assisted in the continued development of the Child Study Center and was nominated for the Burlington Northern Foundation Faculty Achievement Award in 1985. Mize, an assistant professor in the Department of Family and Child Development, is a leading researcher in the area of early childhood peer relationships as well as other social development issues such as latchkey children. A regular contributor to many professional and lay publications, books and professional conferences, Mize also serves as a reviewer for professional journals and has consulted on child development texts for leading book publishers. Her greatest impact on the early childhood development field, however, has come through her research. Results of her studies have helped generate methods of monitoring and improving the social skills of preschool children, talents vitally important to the development of healthy, well-adjusted adults.



MARGARET CRAIG-SCHMIDT

Usually commonplace problems inspire scientists to develop and research theoretical solutions. For Margaret Craig-Schmidt, however, the study of human nutrition progressed in the reverse order, from theory to practical application. Craig-Schmidt entered Duke University as a chemistry major with an interest in biochemical theory and the medical sciences. While working on a Ph.D in physiological chemistry at the University of Wisconsin, she studied very specific dietary issues. After graduation, her focus broadened to encompass the practical study of human nutrition.

Craig-Schmidt, who joined the Department of Nutrition and Foods as an assistant professor in 1984, has focused her research on the potential benefits and hazards of various nutritional factors such as dietary fat. Her studies have examined the influence of dietary fat on infant and maternal nutrition as well as the impact these dietary factors have on human disease. Craig-Schmidt's projects have received funding from the USDA Competitive Grants Program and the Cystic Fibrosis Foundation, she has been featured on a nationally televised health program, and she is a frequent contributor to professional publications and meetings. Her research continues to unravel the intricate system of human nutrition, clarify myths about nutritional fads, and document the important role proper nutrition plays in the health and well-being of the human race.

GRADUATE STUDY IN HUMAN SCIENCES

An integral part of most successful research programs involves the education and training of graduate students. The School of Human Sciences is recognized for its quality graduate programs in Consumer Affairs, Family and Child Development, and Nutrition and Foods.

The Department of Consumer Affairs offers graduate instruction leading to the Master of Science Degree. Concentrations are available in textiles and apparel. A joint Master of Science Degree in Textile Science is available through the Departments of Consumer Affairs and Textile Engineering. Major areas of study include design and utilization of textile products, engineering and technology of textile production, textile science, and textile chemistry.

The Department of Family and Child Development offers graduate education leading to the Master of Science Degree and

Doctor of Philosophy Degree with concentrations in child development and family studies, the Master of Science Degree in Marriage and Family Therapy, and the Master of Arts in College Teaching. The Department emphasizes the integration of knowledge from various fields for the purpose of understanding and developing professional skills for careers in college teaching and research, teaching and supervision of programs for young children, parent education, marriage and family therapy, community service, business, and industry.

The Department of Nutrition and Foods offers graduate instruction leading to the Master of Science Degree or Master of Arts in College Teaching. Major concentration areas are available in nutrition and food science. The Department also administers an Interdepartmental Graduate Program of study and research in nutrition leading to the degrees of

Master of Science and Doctor of Philosophy. Students may elect to specialize in nutritional biochemistry or the more applied areas of human nutrition, large or small animal nutrition, poultry nutrition, or fish nutrition.

Individuals interested in pursuing graduate study in the School of Human Sciences should contact the Graduate School, Auburn University, AL 36849-5122, for an admission application and a copy of the Graduate School Bulletin.

The Bulletin provides detailed information on the regulations of the Graduate School, courses offered for graduate credit, requirements for degrees, financial aid, and other matters pertaining to graduate education. For more detailed information on a specific graduate program within the School of Human Sciences, contact the Graduate Program Officer of the appropriate department, School of Human Sciences, Auburn University, AL 36849-5601.

