

# The Communicator

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## Greetings

I hope everyone had a happy, healthy, and safe Thanksgiving holiday. It was a bit strange for me to finally be at a university where classes are dismissed for the entire week. I must say it is a plan I have supported for a long time (students seem to take the entire week off from classes anyway) but never fortunate enough to have a position where it happened.

Thanksgiving always marks that fast and furious rush into the New Year. This year my hope for each and every one of you is to slow down and enjoy this time of year. Find ways to spend time with family and friends that are not harried and “have to” times. Spend time reflecting on this past year and set realistic goals for 2013.

In keeping with one of my goals for the Communicator I have asked Sandra Evenson to share some thoughts this month on the National Extension Association of Family and Consumer Sciences national conference held earlier this fall.

## NEAFCS Conference

I attended NEAFCS with the primary purpose of recruiting for the Extension Specialist position in Personal and Family Finance. I attended Program Track presentations and the FCS Program Leaders meeting. Here are my top five take-aways:

1. Dell Warren from **Discovery Education** (as in the Discovery Channel) described the “health and guidance” programming Discovery Education offers. He offered a variety of ways Extension and Discovery can partner. For example, UI has award winning programs that Discovery could distribute nationally. Or, they can help develop programs with the built-in flexibility to be customized by every state.
2. Connected to national distribution of programming is the implementation of **social networking**. According to Educator Alice Henneman, social media supports the Extension mission to “reliably and repeatedly help people achieve their goals.” She uses FaceBook, Twitter, Pinterest, Twitter, Wordpress, Vimeo, and YouTube. I know many of you already use social media and I was struck by the variety of media and how they link to and support each other.



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She acknowledged that social media is not a substitute for face-to-face and hands-on, but has other advantages. Social networking connects with individuals in new and compelling ways—especially if we want to appeal to younger audiences. Other advantages include sharing news (and its reliable interpretation) as it happens, the potentially viral distribution of “news you can use,” and the communities developed through social networking.

3. The **Master FCS Volunteer Program**, presented by Beverly Samuel, is based on the Master Gardener and Master Food Preserver programs. NIFA is working through Montana State to develop a model program that can be replicated and adapted to any state.
  - Volunteers become advocates for FCS. They often have content specific expertise, but need the big picture in order to talk with others about the larger public value.
  - The program is not how to be a volunteer, but intended to build FCS capacity.
  - There are three modules and 12 total lessons on 1. Cooperative Extension history, core areas of FCS, and the role of volunteers; 2. Effective communication, diverse audiences, and resource development; 3. Branding and public value. Pedagogy includes a wide variety of interactive activities appropriate to differing learning styles.
  - To be launched at Galaxy next year with training for FCS leaders and educators.

- AAFCS is a resource for history, mission, and philosophy of FCS, as well as assessment tools.
  - The vision is to use the FCS Master Volunteer program as a unifying nationwide brand that gives FCS Extension a national identity and visibility.
4. When I attended AAFCS two years ago, I was disappointed by the lack of vision and leadership in the organization. Times and leadership have changed. Carolyn Jackson spearheaded the creation of the **FCS Alliance**—an organization addressing the full interdisciplinary field. The Alliance includes pretty much any group with FCS in its name, honor societies like Phi Upsilon Omicron, the Board on Human Sciences, FCCLA, and NIFA/FCS.
- The key priority of the FCS Alliance is to educate audiences about the public value of FCS. The Quixote Group (a research, marketing, and PR firm) was hired to determine what is most interesting to the media. Topics emerged on the economy's impact on families, childhood obesity, family finance, and military families.
  - Carolyn went on a NYC media tour, meeting with CNNMoney.com, Self, Essence, Whole Living, Shape, Fitness, and two more magazines. They each gave her 30 minutes, when she was told to expect 8 minutes. Her conclusion was that they need us as much as we need them. The media are looking for credible research-based information to raise their own value with readers.
  - Following her media tour, Carolyn was contacted by CNN on an economics question. She contacted Anne Vail, who connected one of her professors with the Quixote people, who sent out a media response team to give the professor a crash course in key messages and sound bites. The professor was then also contacted by the Huffington Post. So, there is a need to identify our colleagues who have expertise as well as media experience or who are willing to learn.
  - Carolyn reports that the media is requesting some kind of regular communication, like a quarterly digest of current FCS research, teaching, and outreach.
5. Muquarrab Qureshi (USDA NIFA, Assistant Director-Institute of Youth, Family, and Community) spoke and offered the following observations:

- If we keep saying Extension is the best kept secret then we are part of the visibility problem.
- Many NIFA initiatives have the aim of creating a national brand for Extension.
- NIFA needs a tag line. Should it be “We will cure what ails you” or “We will prevent what ails you?” He prefers returning to an emphasis on prevention.
- He argues to find the nexus between technology and sociology through Extension, driven by creating outcomes with public value.

Idaho had an excellent showing of participants and award winners, as usual! Special recognition went to Jan Scholl (Pennsylvania (Team), Internet Education Technology, 1<sup>st</sup> place National Winner). Jan is an '75 alum of FCS here at UI and returns regularly to this area to visit family. Last fall, while I was on site visits in the UK, she presented to the FCS 501 Graduate Seminar class on her work in Extension.



**Barbara Abo**, Distinguished Service Awards  
**Laura Sant and Marnie Spencer**, Educational Curriculum Award—Balanced Living, 1st place National Winner  
**Laura Sant and Marnie Spencer**, Educational Technology Award—Balanced Living, 3rd place National Winner



Laura Sant, Barbara Abo, and Marnie Spencer

## Most Important Innovations in the History of Food and Drink

Which inventions in human history have been the most significant regarding our food and drink? The Royal Society, which is the United Kingdom's national academy of science, recently addressed this issue via a survey of their members and of experts in the food and drink industry. They started with a list of 100 innovations, which was winnowed down to 20, then ranked in order of importance. You may not agree, but it is interesting to see how the innovations were ranked. The list (see below, some items with comments) does get one to think about the number and variety of inventions that have affected our food supply.

1. **Refrigeration.** The use of ice to lower the temperature of and thus preserve food dates back to prehistoric times. Artificial refrigeration was first demonstrated in 1748 and then produced commercially in 1805. Domestic mechanical refrigerators first became available in the early 20th century.
2. **Pasteurization/sterilization.** Routine pasteurization of milk began in the United States in the 1920s and became widespread by 1950 as a means to reduce contamination and human illnesses. It led to dramatic reductions in the number of people getting sick from diseases that had previously been transmitted commonly by milk. It is one of the most effective public health interventions.
3. **Canning.** A British merchant patented the tin can in 1810, a year earlier a Frenchman applied a similar process with glass jars and cork. This invention allowed shelf stable storage of perishable food.
4. **The oven.** The earliest ovens, found in Central Europe, date from 29,000 BC. Gas ovens were first developed in the early 19th century.
5. **Irrigation.**
6. **Threshing machine/combine harvester.** Invented in the late 18th century, the thresher brought more industrialization to farming, allowing for the mechanized separation of grain from stalks from husks. Prior to its invention, farmers had separated grain by hand, with flails.
7. **Baking.**
8. **Selective breeding.**

9. **Grinding/milling.** The milling of grain has been in practice since 6000 BC, enacted by millstones and similar implements.
10. **The plough.** Cultivation of the soil in preparation for sowing seeds is associated with earliest agriculture.
11. **Fermentation.** Use of yeast and bacteria for production of wine, beer, vinegar, yogurt, bread, cheese and pickled vegetables.
12. **The fishing net.** Fishing nets have been used since the Stone Age, with the oldest known version made from willow and dating back to 8300 BC.
13. **Crop rotation.**
14. **The pot.** Cooking grains in water increased food value.
15. **The knife.**
16. **Eating utensils.**
17. **The cork.**
18. **The barrel.**
19. **The microwave oven.**
20. **Frying.**

Source: "Royal Society names refrigeration most significant invention in the history of food and drink," September 13, 2012, <http://royalsociety.org/news/2012/top-20-food-innovations>; "The 20 Most significant inventions in the history of food and drink," September 13, 2012, <http://www.theatlantic.com/technology/archive/2012/09/the-20-most-significant-inventions-in-the-history-of-food-and-drink/262410>.

Keywords: food, history.



## Food Safety

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## The Challenge of Producing Safe Cantaloupes

Last year, cantaloupes from Colorado were responsible for 29 *Listeria* infection deaths. This year, two *Salmonella*-infection deaths occurred as a result of eating cantaloupe. Since 2000, there have been 20 outbreaks of illness associated with cantaloupes, mostly due to *Salmonella* infections, but with some outbreaks due to *Listeria* and norovirus.

Some cantaloupe farmers are getting out of the business of growing the fruit because of the risks and the liability involved. A recent article in *Food Protection Report* discusses the issue of finding more effective ways to ensure the safety of cantaloupes. Cantaloupe safety has become one of the most important challenges for produce growers and food safety experts. Because of the myriad difficulties, at present it is not possible to consistently supply produce that is completely free of contaminants.

One of the most challenging issues for cantaloupe growers and packers is the hard-to-remove biofilms created by microbes on the rind of the fruit and elsewhere. Biofilms are a mechanism used by many bacterial species to produce adhesive structures and substances that allow them to stick to each other and to surfaces, forming a film. Contaminating bacteria can reside on the surface of equipment and implements used to handle cantaloupe and on the food itself. If cleaning is not done quickly and rigorously, bacterial products gradually build up and create a film or shell that protects the bacteria from chemicals.

Research has demonstrated that sanitizing chemicals cannot be relied on to kill pathogens on cantaloupes. The presence of biofilms interferes with the ability of chlorine to kill pathogens on fresh produce. Wash water will get the dirt off, but the chlorine used in the wash water is to prevent cross contamination by killing pathogens in the water; it will

not necessarily kill bacteria on the produce. When melons are washed in a chlorine solution, about 90 percent of the bacteria are eliminated, but the remainder lodge in biofilms, if present, or in crevices of the rind, protected from chlorine action.

Because it is hard to remove biofilms once they form, the industry and the research community are focusing on prevention. Researchers have been investigating where contamination occurs within the supply chain from production to food preparation. It is known that the longer the contamination persists, the more likely it is that biofilm will form, so practical systems are needed in the growing environment and in the post harvest handling, packing and the washing environment to minimize contamination and minimize conditions for biofilm formation.

Good Agriculture Practices (GAPs) require producers understand where pathogens can come from and to implement strategies to prevent them from getting on produce. Possible sources of contamination on cantaloupe include irrigation water or other agriculture water, compost and fertilizer, workers and equipment, how the ground is used between seasons, and whether animals come near the growing area.

The Food and Drug Administration reported several possible causes for last year's *Listeria* outbreak linked to Colorado cantaloupes, including a low level of *Listeria* in the field, water pooling near equipment on the packing facility floor, packing equipment that could not easily be cleaned and sanitized, and the lack of a pre-cooling step to remove field heat from the cantaloupes before cold storage.

In California, which supplies approximately 75 percent of domestic cantaloupes, handlers voted unanimously in May 2012 to accept a food safety program implemented by the California Cantaloupe Advisory Board. The mandatory program will include food safety certification that requires inspection by government auditors to verify that a set of science-based production and handling metrics are being followed. On the national level, four groups are working on a cantaloupe guidance.

Source: "The challenge of producing safe cantaloupes," *Food Protection Report* 28(9):1, September 2012.

Keywords: food safety, fruit.

## A High Cost of Child Rearing

The USDA annual report, *Expenditures on Children by Families*, finds that a middle-income family with a child born in 2011 can expect to spend about \$234,900 (\$295,560 if projected inflation costs are factored in\*) for food, shelter, and other necessities to raise that child over the next 17 years. This represents a 3.5 percent increase from 2010. Expenses for transportation, child care, education, and food saw the largest percentage increases related to child rearing from 2010. There were smaller increases in housing, clothing, health care, and miscellaneous expenses on a child during the same period.

The report, developed by the USDA Center for Nutrition Policy and Promotion, notes that family income affects child rearing costs. A family earning less than \$59,410 per year can expect to spend a total of \$169,080 (in 2011 dollars) on a child from birth through high school. Similarly, middle-income parents with an income between \$59,410 and \$102,870 can expect to spend \$234,900; and a family earning more than \$102,870 can expect to spend \$389,670. Annual family expenditures per child generally increase as the children get older.

For middle-income families, housing costs are the single largest expenditure on a child, averaging \$70,560 or 30 percent of the total cost over 17 years. Child care/education (for those incurring these expenses) and food were the next two largest expenses, accounting for 18 and 16 percent of the total cost respectively over 17 years. These estimates do not include costs associated with pregnancy or the cost of a college education or education beyond high school.

The report notes geographic variations in the cost of raising a child, with expenses the highest for families living in the urban Northeast, followed by the urban West and urban Midwest. Families living in the urban South and rural areas have the lowest child-rearing expenses.

This is the 51th year USDA has issued its annual report on the cost of raising a child. In 1960, the first year the report was issued, a middle-income



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family could have expected to spend \$25,230 (\$191,720 in 2011 dollars) to raise a child through age seventeen. Housing was the largest expense on a child both then and now. Health care expenses on a child doubled as a percentage of total child-rearing costs. In addition, some current-day costs, such as child care, were negligible in 1960.

Expenses per child decrease as a family has more children. Families with three or more children spend 22 percent less per child than families with two children. As families have more children, the children can share bedrooms, clothing and toys can be handed down to younger children, food can be purchased in larger and more economical quantities, and private schools or child care centers may offer sibling discounts.

These expenditure estimates are based on the Federal government's consumer expenditure survey. The full report, *Expenditures on Children by Families (2011)*, is available on the web at [www.cnpp.usda.gov](http://www.cnpp.usda.gov).

Source: [www.cnpp.usda.gov](http://www.cnpp.usda.gov).

Keywords: children, family, spending.

## Early Stress, Brain Functioning and Later Anxiety

High levels of family stress in infancy are linked to differences in everyday brain function and anxiety in teenage girls, according to new results of a long-running population study by University of Wisconsin-Madison scientists.

The study highlights evidence for a developmental pathway through which early life stress may drive these changes. Here, babies who lived in homes with stressed mothers were more likely to grow into preschoolers with higher levels of cortisol, a stress hormone. In addition, these girls with higher cortisol also showed less communication between brain areas associated with emotion regulation 14 years later. Last, both high cortisol and differences in brain activity predicted higher levels of adolescent anxiety at age 18.

The young men in the study did not show any of these patterns.

“We wanted to understand how stress early in life impacts patterns of brain development which might lead to anxiety and depression,” says first author Dr. Cory Burghy of the Waisman Laboratory for Brain Imaging and Behavior. “Young girls who, as preschoolers, had heightened cortisol levels, go on to show lower brain connectivity in important neural pathways for emotion regulation—and that predicts symptoms of anxiety during adolescence.”

To test this, scans designed by Dr. Rasmus Birn, assistant professor of psychiatry in the UW School of Medicine and Public Health, showed that teenage girls whose mothers reported high levels of family stress when the girls were babies show reduced connections between the amygdala or threat center of the brain and the ventromedial prefrontal cortex, a part of the brain responsible for emotional regulation. Birn used a method called resting-state functional connectivity (fcMRI), which looks at the brain connections while the brain is at a resting state.

These findings are part of a longitudinal study of Wisconsin families. Burghy and Birn used functional MRI to scan the brains of 57 subjects—28 female

and 29 male—to map the strength of connections between the amygdala, an area of the brain known for its sensitivity to negative emotion and threat, and the prefrontal cortex, often associated with helping to process and regulate negative emotion. Then, they looked back at earlier results and found that girls with weaker connections had, as infants, lived in homes where their mothers had reported higher general levels of stress—which could include symptoms of depression, parenting frustration, marital conflict, feeling overwhelmed in their role as a parent, and/or financial stress. As four-year-olds, these girls also showed higher levels of cortisol late in the day, measured in saliva, which is thought to demonstrate the stress the children experienced over the course of that day.

Near the time of the scan, researchers queried the teenagers about their anxiety symptoms, and about the stress in their current lives. They found a connection with childhood stress, rather than current stress levels. This suggested that higher cortisol levels in childhood could have modified the girl’s developing brain, leaving weaker connections between the prefrontal cortex and amygdala—an association that explained about 65 percent of the variance in teenage anxiety levels.

“Our findings raise questions on how boys and girls differ in the life impact of early stress,” says Davidson, who calls the disparity unsurprising. “We do know that women report higher levels of mood and anxiety disorders, and these sex-based differences are very pronounced, especially in adolescence.”

“Now that we are showing that early life stress and cortisol affect brain development,” she says, “it raises important questions about what we can do to better support young parents and families.”

Source: University of Wisconsin, [www.news.wisc.edu](http://www.news.wisc.edu).

Keywords: stress, children at risk.

## Healthier School Policies May Help Decrease Youth Obesity

In January 2012, First Lady Michelle Obama and Agriculture Secretary Tom Vilsack announced changes to school meals that would make them healthier for the 32 million students that participate in school meal programs. Since students consume between 30-50 percent of their daily calories at school, both Michelle Obama and Tom Vilsack wanted these meals to help students meet their nutritional needs and help them stay active.

Some of the major changes to the lunch menu that were required when school began this fall included:

- increasing fruit and vegetable servings at lunch and snack time
- making half of grains whole
- serving milk that is nonfat or one percent fat
- decreasing the size of the meat or meat alternative serving

How did the students respond? Some of them rebelled by discarding the fruits and vegetables into the garbage or by purchasing less healthy foods from vending machines and snack bars, such as chips, candy, cookies, burgers, fries, and sugary beverages. It may take time for the students to accept the healthier meals.

Several states have found that when policies are implemented to make the school environment healthier, student overweight and obesity rates decrease. For example, in 2006, Mississippi had the highest obesity rates in the country. They incorporated the following policies into their schools:

(1) make the school meals healthier, (2) set nutrition standards for foods sold in school vending machines to decrease sugar, salt, and fat content of these food items; (3) increase physical activity time in schools, and (4) include health education into the curriculum.

As a result, over a four year period, the percentage of children in grades K-5 in Mississippi who were obese or overweight decreased from 43 percent in 2007 to 37.3 percent in 2011.

Source: [http://www.fns.usda.gov/cga/press\\_releases/2012/0023.htm](http://www.fns.usda.gov/cga/press_releases/2012/0023.htm);



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<http://www.usatoday.com/story/news/nation/2012/10/24/childhood-obesity-declines/1652955>.

Keywords: youth, overweight, obesity.



## Physical Activity Update

Two studies on physical activity provide information on the best time of the day to be active and how physical activity may increase life expectancy.

The first study was conducted by researchers at the University of Glasgow's Institute of Cardiovascular and Medical Sciences in the United Kingdom. They compared the number of calories for 10 subjects, who were not regular exercisers, burned in one hour, using a computer-controlled rowing machine, under two different conditions. In the first condition, subjects exercised for one hour on an empty stomach (before breakfast). In the second condition,

subjects exercised on a full stomach (after breakfast).

Fat oxidation was measured to determine calorie expenditure, and the results showed that when subjects exercised on an empty stomach, they burned 33 percent more calories. Researcher Dr. Jason Gill speculated that exercising on an empty stomach causes the body to rely on stores of body fat and could result in a greater loss of body fat.

In the second study, researchers at the National Cancer Institute pooled results from over 100 epidemiological studies to determine if physical activity affected life expectancy. The sample size of the pooled data included 654,827 subjects aged 21 to 90 years. This large sample size allowed researchers to calculate the number of year's physical activity added to an individual's life, after the age of 40.

They used brisk walking as their measure of moderate physical activity. They measured life expectancy after the age of 40, based on three amounts of physical activity completed five days per week:

- 75 minutes/week (this is half of the recommended physical activity level; approximately 15 minutes/day for 5 days)
- 150 minutes/week (this is based on the recommended level of 30 minutes/day x 5 days)
- 300 minutes/week (this is twice the recommended level of 30 minutes/day x 5 days/week x 2)

The results showed that life expectancy increased as the amount of moderate intensity physical activity increased. When exercising 75, 150, or 300 minutes/week, their life expectancy increased by 1.8 years, 3.4 years, and 4.2 years, respectively. This association between physical activity and life expectancy occurred if subjects' Body Mass Index (BMI) was categorized as normal weight, overweight, or obese.

The researchers concluded that being physically active increased longevity. They hoped that their findings would convince currently inactive persons to become active.

Source: September 19, 2012, journal *Metabolism*, <http://www.sciencedirect.com/science/article/pii/S002604951200282X>; November 6, 2012, online journal *Public Library of Science (PLOS) Medicine*. <http://www.plosmedicine>.

[org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1001335](http://org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1001335).

Keyword: exercise.



## Eating Out Increases Calorie Intake

It is estimated that every day, approximately 40 percent of U.S. children eat either at a fast-food restaurant or a full-service restaurant. Researchers at the University of Illinois at Chicago collected data on the amount of calories, fat, sodium, and sugar children and teens consumed. They analyzed data collected on more than 4,000 children between the ages of 2 and 11 and 4,700 teens between the age of 12 and 19.

They found that when children and teens eat out, their daily total calories, sugar, fat, and sodium intake increase. Eating at fast food restaurants increased daily calorie intake by 126 in children and 309 in teens; in sit down restaurants, calories increased by 160 in children and 267 in teens. They ate 13 percent more sugar, 22 percent more total fat, and 17 percent more salt when eating out. Many of the additional calories came from sugary sodas.

To combat these high calorie meals, families should decrease how often they eat out and cook low-cost healthier meals at home.

Source: November 5, 2012, journal *Archives of Pediatrics & Adolescent Medicine* <http://archpedi.jamanetwork.com/article.aspx?articleid=1389390>.

Keyword: fast food.