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IMPROVING LIVES BY EXPLORING AND SHAPING HUMAN CONNECTIONS TO NATURAL, SOCIAL, AND BUILT ENVIRONMENTS

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Celebrating 150

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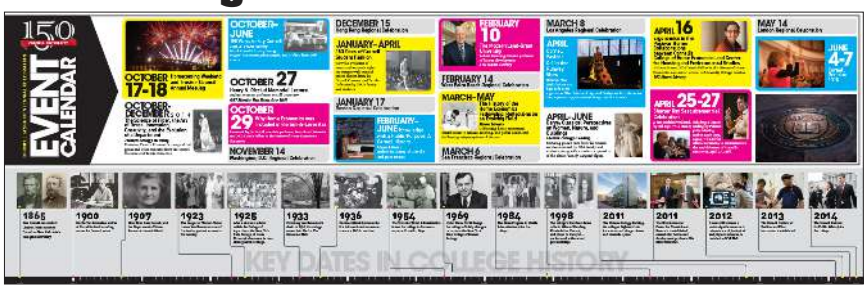


TRAINING D

Students and professors move research into the real world at 4-H Camp Bristol Hills

By Olivia M. Hall

AYS

On a sunny July day, a dozen girls in shorts and t-shirts gather by the small store at 4-H Camp Bristol Hills in Canandaigua, N.Y. Slurping slushies that stain their lips bright orange, blue, and red, they chatter over the sounds of a strumming guitar. Unlike most of their fellow campers, these girls are headed to Big Chief cabin for a unique afternoon activity. Guided by two human development undergraduates, they'll reflect on puberty as part of the "Writing about Life Changes" study led by Jane Mendle, assistant professor of human development. Following a successful pilot study last summer, Mendle is again partnering with camp director Tim Davis to further investigate the health benefits of writing about teen transitions.

"The 4-H program has always had a wonderful connection with the university," says Davis, interim executive director and 4-H program leader of Cornell Cooperative Extension in Ontario County and, thanks to a coffee habit, "Java" to his 70 staff members and 1,000 co-ed campers. "There is a real emphasis on how the camp experience will develop the whole child, and if there is a good fit between faculty and our priority areas—healthy living, STEM (science, technology, engineering, and math), or workforce development—we're very open to discussing partnerships."

Indeed, 4-H Camp Bristol Hills is becoming a prime spot for Cornell professors and students to pursue research and outreach projects. Along with Mendle's study, this summer the nearly-90-year-old camp hosted the "Health and the Brain Neuroscience Outreach" project by Valerie Reyna, professor of human development, and a geospatial science study in the College of Agriculture and Life Sciences, all run by CCE interns.

On this afternoon, Mendle's research assistants Alexandra Holmes '16 and Kathleen McCormick '16 walk 14 girls from the camp store to Big Chief, where they spread out on a collection of mismatched chairs around several tables. They open booklets titled "Dear Diary - Day 3" and listen to Holmes deliver instructions to write for 20 minutes about changes they have noticed in their relationships with their parents and family members since entering puberty. Hunched over their booklets, the girls scribble away, the silence broken by kitchen clatter heard through the screen doors and sheep bleats from the critter care class outside.

"Some of the things they write are really funny, some are sad," Holmes says after the girls hand in their booklets anonymously and leave for their cabins. "No matter the focus of the writing, it is amazing how genuine and thought-provoking the responses are."

"Often they're glad they've gotten their thoughts out on paper," McCormick adds.

Such expressive writing exercises—brief, focused interventions to write about periods of change—have been shown to benefit participants, Mendle explains. For pubescent girls, writing about their relationships with peers and parents could help to head off potential negative consequences of a difficult life stage, including depression, anxiety, poor self-esteem, and body dissatisfaction. "Everybody knows that puberty is rough on kids," she says.

Mendle will measure their mental health changes against control groups completing a neutral writing exercise and by following up with the campers after three months. She anticipates that by the summer's end her research assistants here and at Hidden Valley, another 4-H camp near Watkins Glen, will have recruited more than 100 girls—lured by the promise of free slushies—adding to 50 from her pilot study last year.

Molding Minds

Down the hill from Big Chief cabin, on the bright second floor of Woodard Lodge, human development research assistant Lindsay Dower '17 opens a session on health and the brain with two middle-school-aged girls and one boy gathered at a long craft table.

"Let's make our own brains out of clay!" Dower tells the campers. They roll two white balls for the left and right hemispheres, bridge them together with a thin red corpus callosum, add a blue cerebellum, and cover everything with colorful parietal, temporal, and occipital lobes. Along the way, Dower explains each part's function.

"The medulla oblongata controls breathing, so it's very important," she says. "I got my camp name, 'Medulla,' when I told other counselors that it's my favorite part of the brain stem."

Dower, at left, leads campers in a lesson; Davis, middle, hopes Bristol Hills excites kids about STEM fields.

For the next two hours, campers bounce around the room, absorbed in such hands-on activities as pretending to be fat cells that try to process "calories" made from yarn.

"The goal of our project is to look at how effective this curriculum is in helping kids learn about neuroscience, genetics, and nutrition," Dower says.

During three weeks at Bristol Hills, Dower is observing participants—some of whom were part of a special 4-H STEM program—as they complete randomly assigned nutrition or genetics modules.

Both are updates from last year's pilot study based on Reyna's fuzzy-trace theory, which proposes that people retain information in two ways—verbatim and gist. But when making decisions, adults tend to rely on the fuzzier gist of the situation whereas teens analyze the verbatim facts, an approach that often leads them to underestimate the dangers of risky choices.

"In the context of Lindsay's research, verbatim knowledge could be memorizing calorie counts of foods and making nutrition into a math problem," Reyna's graduate student lab leader Evan Wilhelms says. "But many people, despite knowing what good nutrition is, don't make healthy choices. We theorize that they lack insight into why, for example, it is important to count calories. You're more likely to retain and use information when you have an understanding of it."

While adolescents are great at memorization, they are still learning to rely on gist knowledge, leaving them prone to make risky choices. "That's why we're specifically targeting them," Wilhelms adds.

By creating model brains, Dower hopes campers will understand the essence of how the brain works, even if they don't remember the specifics about each part.

Role Models

In the same way that archery, swimming, woodworking, and singing around the fire draw campers to Bristol Hills, Davis hopes the camp will become known for introducing kids to the value of STEM. "The studies are wonderful experiences," he says, pointing to numerous benefits for participants, including exposure to higher-level subject matter and personal growth.

Faculty members, on the other hand, develop new youth curricula, provide outreach opportunities to their undergraduate and graduate students, and find subjects for their studies. "The big advantage of the camp is that it allows us to test research on a pretty broad sample of people in a relatively short timeframe," Mendle says. "I'm very grateful to Tim for that opportunity, which embodies what extension is supposed to be."

Students learn to move research from controlled lab settings into the real world, where distractions can require "going with the flow," says Dower. "It's also taught me leadership and interpersonal skills. My favorite part is working with the campers. Some of them ask me questions about studying science in college, and I love talking about my experiences. There is definitely a mentoring component."

For Davis, it is one of the greatest benefits of bringing CCE interns to the camp. "STEM might not be something that our campers have enjoyed previously, but then they see the enthusiasm that young adults like Lindsay have for it," he says. "They're seeing young women who are succeeding at college and doing some incredible things."

The research assistants' full integration into camp—from eating meals in the lodge to teaching afternoon recreation classes—reinforces these interpersonal connections.

"By the end of the week, the girls enjoy not just the experiment but also hanging out with us," says Holmes.

"The best thing is when someone gives us a hug goodbye and says, 'I'm going to miss you,'" McCormick agrees. "That's pretty impressive."

Olivia M. Hall, PhD '12, is an anthropologist and freelance writer.

4-H Camp Bristol Hills 4-hcampbristolhills.org • **CCE Summer Internships** cce.cornell.edu/learnabout/getinvolved/Pages/SummerInternshipProgram.aspx

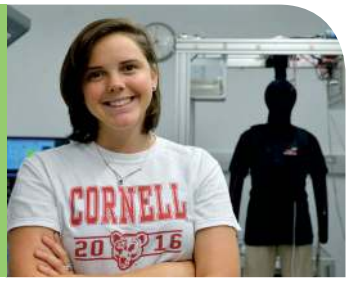
Mark Vorreuter (Left and Middle); Jim Hooper

DIVING INTO RESEARCH AND OUTREACH

Camp Bristol Hills was not the only place where Human Ecology students received an education in real-world research and outreach this summer.

Thirteen Cornell Cooperative Extension interns supported community projects throughout the state—from the hills of central New York to the streets of New York City. Another 15 students conducted research alongside faculty members through the Human Ecology Undergraduate Summer Research Awards program, offered to immerse students in labs.

At right, four students share more about their summer experiences.



Caroline Donelan '16
Fiber Science & Apparel Design

Addressing heat stress, particularly for firefighters, soldiers, and farmworkers, Donelan aided Assistant Professor Huiju Park's development of cooling textiles that use the body's natural thermoregulation.

"My favorite experience has been conducting testing with the thermal manikin," Donelan says. "We can use a fully functional, sweating manikin to test various qualities of textiles we use every day."

Jon Galati '15
Human Biology, Health, and Society

Under Professor Kimberly O'Brien, Galati studied how iron transfers from mothers to fetuses during pregnancy, examining two proteins involved in the process. Understanding these mechanisms will aid in treatments for iron deficiency during pregnancy.

"The topic is highly relevant since iron deficiency and anemia continue to be a worldwide problem for women and children," Galati says.

Jane Conway '16
Human Biology, Health, and Society

In a campus lab and in participants' homes, Conway tested infants' language abilities, emotional control, and attentional focus, supporting Professor Gary Evans' research to pinpoint how and when educational gaps develop between children in low-income families and peers who are better off.

"My favorite part has been interacting with people across Tompkins County," Conway says. "Sometimes I get caught up in the 'Cornell bubble' and don't see what's going on around me. This project has not only let me see different parts of the community, but also allowed me to interact with people from different backgrounds."

Emily Miller '16
Policy Analysis and Management

Miller studied the effectiveness of public service announcements in reducing DUI arrests, fatalities, and injuries. Guided by Professor Rosemary Avery, she examined which characteristics of PSAs work best for various demographic groups (men and women, and young and older drivers, for instance).

"Professor Avery was there to rein me in, keep me focused, and advise me on subjects that felt murky," Miller says. "All the moving parts came together, and I have a deeper understanding of research."

—Geoff Preston

Dani Corona '15 (4)