



RESEARCH DAY

**New Ideas,
New Solutions**

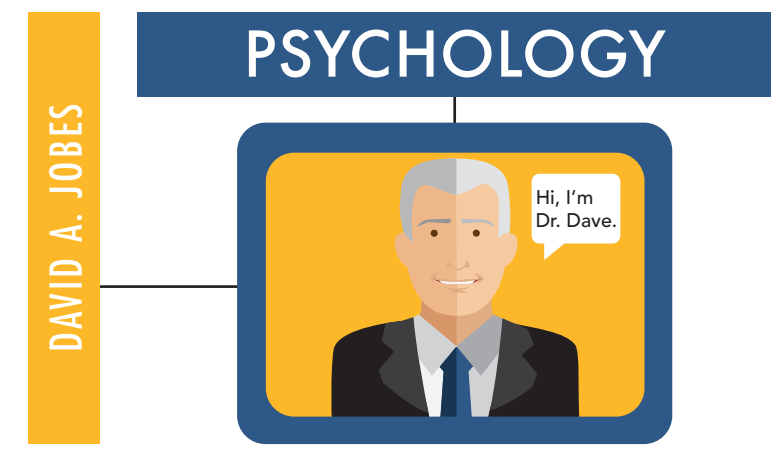
By Katie Bahr, Greg Varner, and Ellen N. Woods

“BEING HERE AT A RESEARCH UNIVERSITY YOU HAVE AN OPPORTUNITY TO CHANGE THE WORLD.”

That was the message from law professor Mary Leary at her keynote address for Catholic University’s second annual Research Day on April 20. Leary believes the innovative ideas sparked by research can lead to new solutions for today’s biggest challenges. Her own research allows her to look closely at a topic she’s passionate about: human trafficking.

Leary, a nationally recognized scholar in the area of crimes against women and children, was one of hundreds of faculty, students, and staff members who presented their ideas and discoveries on Research Day. Presentations covered a wide range of topics, including fake news, astrophysics, Chaucer, and the philosophical roots of democracy, to name a few.

As part of *CatholicU’s* issue dedicated to innovation, we look at some of the 235 creative and inspiring research projects presented on Research Day.



A Novel Intervention for Treating Suicidal Patients

David A. Jobs has been teaching in the Department of Psychology for 29 years. He is the author of *Managing Suicidal Risk: A Collaborative Approach*, now in its second edition.

WHY: “I kind of backed my way into the study of suicide prevention and then became passionate about it. We’re saving lives, and that was irresistible to me. It became my life’s work.”

ABSTRACT: The typical treatment for suicidal patients includes a combination of hospitalization and drugs. But the traditional methods aren’t always effective because they try to treat an underlying condition — typically, depression — while paying scant attention to the “drivers,” the particular problems that are pushing a person toward suicide.

David Jobs has been a leader in developing a highly innovative model for treating suicidal patients, Collaborative Assessment and Management of Suicidality (CAMS), and is now the model for an equally effective digital avatar, a slightly cartoonish version of himself dubbed “Dr. Dave.” He was approached by a team of researchers from Seattle and signed on to their proposed project with enthusiasm. The team won a grant from the National Institute of Mental Health to build the avatar, which aims to hit what Jobs calls “that sweet spot” between the real and the unreal. “Dr. Dave” is lifelike enough to elicit recognition, but abstract enough to be nonthreatening.

“Suicidal patients are much more comfortable with it,” says Jobs. “They feel much less judged, and much less shamed, and typically they’re more forthcoming and they disclose more.”

Jobs’s research could revolutionize the way suicidal patients are treated. Currently, if a suicidal person goes to a hospital emergency department, he will likely face a long wait while other, seemingly more urgent, cases are treated first. In the future, however, a nurse could invite the patient into a room or a cubicle and provide him or her with an iPad on which the avatar modeled on Jobs appears.

“Hi, I’m Dr. Dave. I’m an avatar, but I’m based on a real person. This means

I’m a virtual person created by doctors and researchers who have helped a lot of suicidal patients over the years. I’m a member of your care team and some people feel more comfortable talking to me first because I have all the time in the world, and I’ll never judge you.”

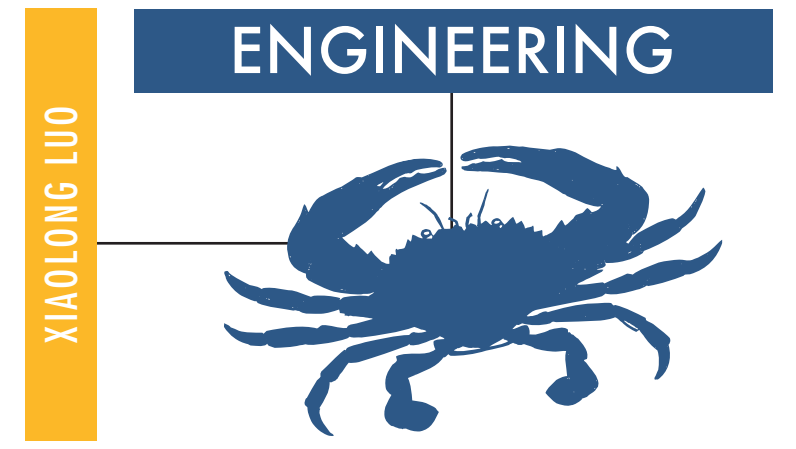
After some preliminary questions, patients who choose to work with the avatar are encouraged to reveal their drivers, rating their psychological pain and then describing in their own words what is causing the pain. The program generates a report with copies for the patient and for the attending physician, along with recommended treatment options. Dr. Dave even follows up with a friendly automated call post-discharge.

The road map that guides Dr. Dave and the CAMS intervention is the Suicide Status Form (SSF), a tool created at Catholic University.

“It’s a process that a clinician and patient engage in together,” explains Jobs. “It lets them see me as a guy with lots of ideas about how to approach the problems that they say put their lives in peril. That’s hope-instilling, and hope is the magic ingredient. People kill themselves in the absence of hope.”

An innovative aspect of the CAMS model is the idea that patients are collaborators in their own treatment. The strategy of treating drivers, rather than underlying conditions, is also innovative. Pragmatic, specific interventions are recommended to target certain drivers. If a patient says, “I’m afraid I’ll lose my house,” for example, training in credit management might be recommended.

“What we can guarantee with CAMS is the best possible care, the best assessment, and the best suicide-specific intervention,” Jobs says. “We can’t guarantee the outcome, but our evidence is robust and patients like it. It’s a pretty radical departure from the traditional way things are done.”



New Platform for Biological Study

Xiaolong Luo is an assistant professor of mechanical engineering. His specialties include microfabrication, microfluidics, and bioengineering.

WHY: Luo finds engineering inspiration in the natural world. He uses his expertise to manufacture creative solutions for scientists in other fields.

“WHEN PEOPLE WERE TALKING ABOUT THE POLICE, THEY WERE TALKING IN TERMS OF ‘US’ AND ‘THEM.’ A CORNERSTONE OF MY RESEARCH IS GETTING TO A PARADIGM OF ‘WE.’”

ABSTRACT: Xiaolong Luo’s research goal involves constructing an artificial cell membrane that replicates the membrane properties of cells in the human body. The membrane will be highly valuable for scientists who study how drugs or waste are processed in the body. Normally, those scientists struggle with stand-alone lipid bilayers, which are similar in texture to a soap bubble. Those membranes are very delicate and can last for only a day at most.

Luo’s membrane, which fabricates lipid bilayers on a freestanding, skeletal layer made of materials acquired from the shells of blue crabs and seaweed algae, will be easy to work with and durable enough to last much longer.

In 2016, Luo was awarded a prestigious award for early-career faculty from the National Science Foundation to fund his lipid bilayer research. Since then, he has assembled an interdisciplinary team of students with backgrounds in material science, computer science, engineering, chemistry, and biology to help him fulfill his research goals.

Doctoral student Piao Hu, who presented the project for Research Day, says she was “very proud” to contribute to the lipid bilayer research. “With research we can find something new, we can build something useful, and we can create something valuable with science,” she says.

In the years ahead, Luo hopes to demonstrate a lipid bilayer prototype that will be easy to mass-produce and market to researchers across the country.

“This would be widely used by pharmaceutical companies for fundamental biological study,” Luo said. “It would be game-changing.”

WHY: “I believe in communities, and even in communities that we call marginalized or disadvantaged, there is an amazing depth of vibrancy and humanity. But that’s not the narrative we are talking about in this country,” says Bartholomew. “How can we help communities struggling with poverty and crime? If we can reframe the picture of how police work in communities, we might be able to change what happens.”

ABSTRACT: Describing her many years providing social work services to inner-city communities in the greater Cleveland area, Jennifer Bartholomew says, “When people were talking about the police, they were talking in terms of ‘us’ and ‘them.’ A cornerstone of my research is getting to a paradigm of ‘we.’”

Bartholomew’s work looks at police officers as first social responders. When someone in the community calls for help, police officers are most often the first to respond. In addition to law enforcement responsibilities, what role does the officer play in situations involving domestic disturbance, endangered children, or mental health concerns?

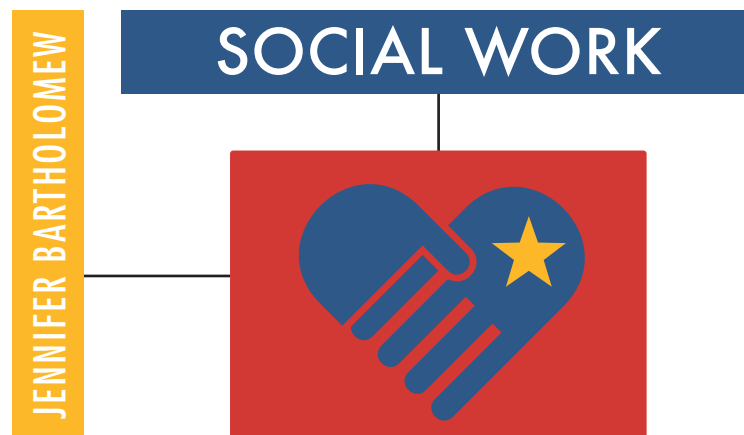
The Police-Assisted Referral Program (PAR) created by Bartholomew’s team in partnership with the Cuyahoga Metropolitan Housing Authority (Cleveland) provides a method for public housing officers to connect violence-exposed families to a wide array of services. Once officers have completed the law enforcement requirement of a crisis situation, PAR allows them to offer a social work referral to the person or persons in need. Those who accept help are given a card with the words, “Help is on the way.” The card also has the officer’s name and a case number. Within 48 hours they are contacted by a social worker offering a confidential assessment that can lead to ongoing services.

“The card itself is not magic,” says Bartholomew. “What is changing people’s perceptions of police in their community is that extra few minutes the officer spends with them. The officer is saying, ‘Hey, I think you need more help than I can give you. I can refer you to a social worker.’ In that short dialogue, the officer demonstrates that he or she cares for that person or group of people and has their best interests at heart.”

Evidence collected between 2013 and 2016 shows that PAR works — almost 85% of people receiving referrals found the program helpful. The program was also successful in improving perceptions of police.

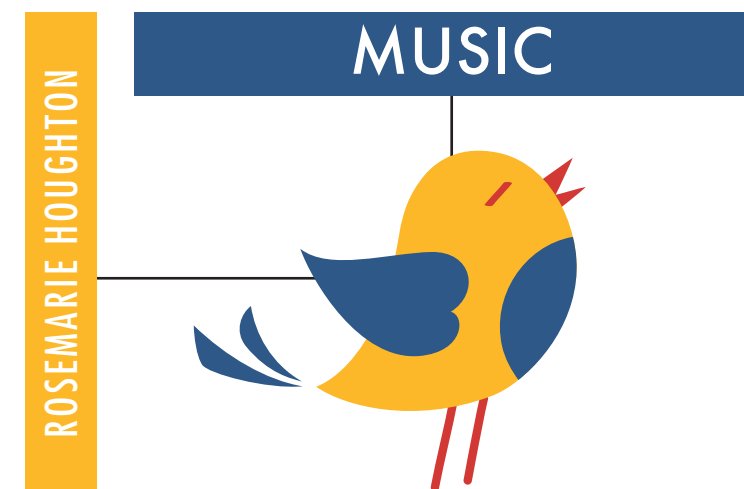
“In order for policing to work, people need to believe police are entitled to respect. To build legitimacy, police officers need to treat people with respect and dignity, allow them the opportunity to explain their side of the story during an encounter, be neutral and transparent in decision-making, and convey trustworthy motives. Giving officers the training and the ability to make referrals to social services allows them to improve legitimacy. That’s what changes the relationship from ‘us and them’ to ‘we.’”

In collaboration with her NCSSS colleagues, Bartholomew is continuing her research in some of Washington, D.C.’s at-risk neighborhoods. “I believe research must be communicated back to the community in a way that promotes knowledge and identifies next steps for change,” she says.



Help is on the Way: Police-Assisted Referrals

Jennifer Bartholomew joined the faculty of the National Catholic School of Social Service (NCSSS) as an assistant professor in fall 2016. She earned her Ph.D. in 2015 at Case Western Reserve University in Cleveland. Her dissertation, “Police Legitimacy in an Urban Context: A Social Welfare Perspective,” has resulted in multiple publications and presentations.



Spanish Music from the Arab World to the New World

Soprano Rosemarie Houghton teaches Spanish lyric diction and a survey of vocal literature in the Benjamin T. Rome School of Music.

WHY: “My parents were from Puerto Rico, so I grew up in a bilingual household. I studied music for many years, but all the emphasis was on the standard repertoire and I really never knew about Spanish classical music, which is a hidden gem. As the world becomes more global, I think students have to be made aware of other cultures. Intolerance comes from lack of knowledge. I want to show the connection between the music of the Arab world and the music of Latin America, of the New World.”

ABSTRACT: “Spain was under domination for hundreds of years by the Arabs,” Rosemarie Houghton said. “When you’re under domination for 700-plus years, you can’t help but absorb the dominant culture. Spanish music has a different sound from the rest of European music. It’s based on Arab scales.”

As a result of Spain’s subsequent colonization of the New World, various musical styles — European and Spanish (with Arab influences), indigenous, and African — combined to create a rich and distinctive body of music.

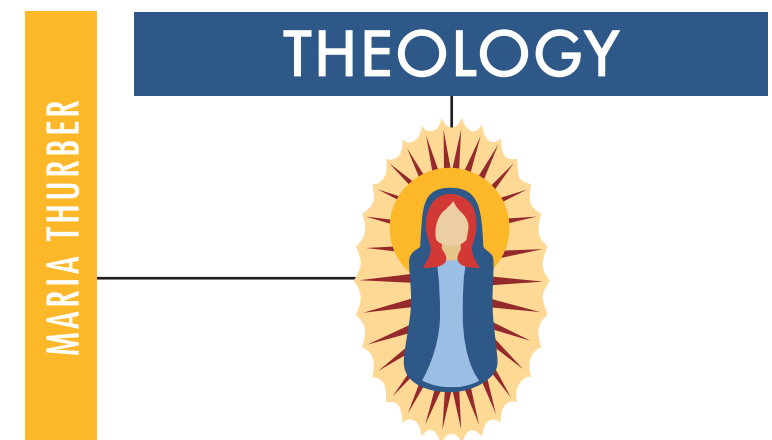
“It really is different. And once people get to know it, they like it,” Houghton says. “The innovation that I see is bringing to the University community knowledge of something that many people don’t know about. I’ve spoken to musicologists for whom this is all brand new material.”

In her Research Day presentation, Houghton played a Venezuelan recording of musicians performing a piece titled “Pajarillo a Ziriyab.” The pajarillo, she explained, is a musical form. It also means little bird. Ziriyab was the nickname of a musician from the caliphate of Baghdad.

“He was like Bach,” Houghton said. “In the art of improvisation and innovation he really excelled. He established music schools, taught music, and had many children, and they went out and established music schools throughout Muslim Spain. Essentially, he and his descendants gave us the sound that we associate with Spain.”

Her interest in Spanish and Latin American music makes Houghton a natural fit for the University’s Latin American Music Center. The center is a repository for works not readily available.

“Collections like this don’t exist in other universities,” Houghton said. “People contact the center for scores and information, things that are difficult to find.”



Devotion to Our Lady of Guadalupe

Maria Thurber, B.A. 2017, double-majored in Spanish for international service and theology and religious studies. She is currently pursuing a master’s degree in library and information science at Catholic University.

WHY: A dual citizen of the United States and Ecuador, Thurber was raised with strong devotion to Our Lady of Guadalupe. “Growing up in Florida, I would wake up at 3 a.m. on Dec. 12 to attend Mass before sunrise and take part in the procession with mariachi music,” she said. “I have read about Hispanic devotions and Mexican devotions, but little has been written about the devotions of the Hispanic community in the United States.”

ABSTRACT: Working under the direction of theology instructor Tyler Sampson, Maria Thurber studied Church teachings and scholarly writings on Marian devotion and popular piety to try to understand the unique cultural methods of expressing devotion to Our Lady of Guadalupe. Along the way, she learned that Mexicans and Mexican-Americans have very high levels of devotion to the Mother of God. In parishes with multiple communities of Hispanic-Americans, Catholics from other Hispanic countries will often join in and adopt the devotion as their own.

“It’s similar to how on St. Patrick’s Day, everyone is Irish,” Thurber said. She was especially interested to learn how the Catholic Church encourages and celebrates these forms of popular piety.

“The narrative of Our Lady of Guadalupe was so important for the Catholic Church’s early evangelization efforts in the Americas. Now with so much diversity, it is important to know how the Church is continuing to incorporate all these different devotions and themes.” **CU**