

2014

## 2014 Research at Andrews

Andrews University

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with in the past. “They said follow your instincts. Be organized. If you call a rehearsal, actually use the people you called. Tell them in advance what they are going to rehearse so they can be prepared,” he remembers. “And those tips worked out really well.”

As a teacher, Reid uses his own experience in the field to help his students understand the joys and challenges of being a musician. “I think that my being active in the performance field makes me a much more valuable addition to the faculty,” he says enthusiastically. “It is a constant source of inspiration in my teaching.” Reid also has contacts in most of the major opera companies and when his students go to a performance, they are often able to meet the cast backstage.

Reid plans to scale back from working with opera and focus on doing concert work, which involves less rehearsal time. This will enable him to spend more time on campus and at home with his wife, Julie, and their children. Julie is a mezzo-soprano and has performed on numerous occasions with her husband. They have already performed once together since moving to Andrews in an evening celebrating the centennial of Benjamin Britten’s birth.

Reid is now gearing up for a busy year at Andrews. In addition to performing “love songs” with his wife, he will prepare a fall Christmas concert and direct “An Evening at the Opera,” which will include a selection of opera scenes performed by his students. Reid’s goal is to encourage students to discover their vocal talents and to mentor them, whether they decide to pursue a career in voice or not. He also hopes to broaden his students’ understanding of God in relationship to the art of music. For Reid, the amazing compositions that he performs and directs are “God-breathed” and should not be dismissed solely as “secular works” just because they were composed for a concert hall or theater. “I see art as art, whether it’s oratorio or opera,” he says. “And I hope that the generations of students who work with me will leave with a broader understanding of God and music.”

## Response to Intervention in Elementary Schools

The kindergartners sat at their desks, writing as many lowercase letters of the alphabet as they could in one minute without erasing. This was not a contest. When the students were finished, researchers took their work and coded it.

This is an example of one of the many assessments administered by Luana Greulich, her lead professor, Stephanie Al Otaiba, and a group of other researchers from Florida State University (FSU)/Florida Center for Reading Research. Their research was part of a five-year Response to Intervention (RtI) project funded by a grant from the National Institute of Child Health and Development that began at Kindergarten and followed students into third grade.

The grant was given to five different research centers throughout the United States and funded projects in Response to Intervention, twin studies, dyslexia, learning disabilities and other areas of education. Greulich, who has since moved to Andrews University and is now associate professor in the Department of Graduate Psychology & Counseling and the Special Education program director, worked at the Florida Center for Reading Research along with other graduate researchers in the area of reading.

RtI is a fluid model in which public school children who are doing poorly in reading or math are moved from the basic tier of general instruction to higher tiers of additional instruction, or intervention. Students in Tier 2, for example, receive 90 minutes of basic instruction (at Tier 1) with the rest of their classmates and an additional 30-45 minutes of tailored instruction twice a week (Tier 2). If students continue to struggle they are moved to Tier 3, in which they receive 45 minutes of additional instruction four–five times a week.

Children who do not respond to intervention are called “non-responders” and are considered to be “at-risk.” “By the time they reach 3rd or 4th grade, they feel like they have already been unsuccessful for two



years. So we were anxious to see whether we could identify at-risk students as early as first grade, and intervene with positive results (growth).”

In the model that Greulich and her associates used, students who were assessed as having made sufficient progress were moved down a tier while students who were not making progress moved up. “You are always moving students in and out of the different tiers, which is a nightmare for the schools, but it is good for the students,” she says. Typically, students are required to go sequentially through Tier 1 and Tier 2 in order to reach Tier 3. This can take some time, and students who would have benefited from Tier 3 instruction in August may not reach Tier 3 until April. The purpose of this study was to identify the non-responders and see how they performed if they were placed directly into the indicated tier in August and moved either up or down the tiers during the school year as necessary, versus the typical RtI model of moving sequentially through the tiers.

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The study performed a randomized controlled trial in which two groups of students received intervention: the regular treatment group, who went through the typical 1-2-3 model; and the dynamic group, who went directly into the indicated tier. The study followed more than 500 children in 34 classes across ten schools in Florida. The 90-minute Language Arts instruction was videotaped and coded for quality and the amounts of instruction that each child received in each area of reading. The types of instruction received (code-focused instruction and meaning-focused instruction



Luana Greulich

paired with teacher/student directed or student directed instruction) were recorded across the five main areas of reading. The instruction was shown to be of consistently high quality to rule out the

possibility that students were being identified as “at-risk” due to poor instruction.

The students were assessed for their needs and then separated by criteria based on prior research into the appropriate tier according to either the typical or dynamic model. The instruction in the Tier 2 and 3 intervention groups was also videotaped and coded for quality to measure fidelity of instruction. The research team routinely assessed students as the school year continued.

Greulich met with administrators on a regular basis to go over data from the assessments and intervention sessions. Once it was clear that students were not progressing, she worked with the administration to get the children into a referral system where they were assessed for special education services. Typically, children with learning difficulties do not receive services until the 3rd or 4th grade, by which time many will have developed avoidance behaviors. In a follow-up study, Greulich examined the behavior exhibited during intervention sessions of “at-risk” students. A surprising result was that marginal non-responders exhibited avoidance behaviors (such as shame, hopelessness and anxiety) to a much greater extent than the very low non-responders.

In 2004, the reauthorization of the Individuals with Disabilities Education Improvement Act (IDEA) mandated that public schools identify children who may have disabilities or be in need of special education services. This has sparked widespread use of Response to Intervention programs that start at the kindergarten and 1st grade level. RtI has been implemented at all grade levels, including high school, but the RtI needs are quite distinct at these different levels. Currently, there is no consistent criteria that is used for RtI. Researchers are trying to develop an assessment system that is consistent across the board and takes into consideration the differences between elementary and

secondary needs with RtI.

The data collection was completed in 2012, and Greulich and her colleagues have shifted their focus to publishing their results. Since 2007, the research group has published 16 articles in journals such as *Reading and Writing: An Interdisciplinary Journal*, *Journal of Learning Disabilities*, *Exceptional Children* and *Early Childhood Research Quarterly*. While most of the research team has moved on from Florida State, they have been able to continue collaborating thanks to email and Skype. The study has been extended for another five years to follow these students longitudinally to assess their writing skill development, under the direction of the principal investigator, Dr. Young Suk-Kim.

Greulich is continuing her research interests with RtI and following up with Young-Suk Kim to extend Greulich’s dissertation that was just published in *Journal of Learning Disabilities* in a special two-part RtI edition. Locally, Greulich is now working with the Berrien Regional Education Service Agency (RESA) to provide quality field experience for her special education courses working with students of all disabilities in the surrounding school systems. Greulich also hopes to work with the Berrien Springs School System, which has a unique special education population. Sixteen different languages are spoken in the Mars and Sylvester Elementary Schools of Berrien Springs, and Greulich wants to know how this impacts the special education and English language learners. “We have a lot of students who come to the school that might appear to need special education, when in fact English is their second language,” she says.

In the future, Greulich would like to establish a research center at Andrews University that would attract grants and implement significant changes in the community. “It could be a center where our graduate students could come and learn how to do research in a way that would set them up for a doctorate,” she says. One of the main goals of her research projects is to give back to the teachers, providing them with fresh ideas for instruction and piloting programs for the students. “That’s what I appreciated about our grant,” she says, “we were out with the teachers and the students working together.”

# Cricket to Cricket

## *Cricket Calling Songs and Neuronal Behavior*

**Thousands of crickets have lived and died in the Andrews University Department of Biology. If one were to stand still in Price Hall and hear the high chirp of a cricket, it is probably not a stray, outdoor cricket lost in the maze of biology classrooms and offices. In all likelihood, it is a lab cricket that has ventured outside of the plastic bin where it was raised.**

Every Tuesday, a new shipment of *Acheta domesticus*, also known as the house cricket, arrives from Fluker’s Cricket Farm in Louisiana. The crickets are placed in a temperature- and light-controlled chamber until they have molted. A student, or “cricketeer” as the undergraduate cricket researchers call themselves, then examines the newly-molted insects and picks out the females, which are easy to spot because of the long ovipositor, or egg-laying organ, that extends from their abdomen. The females are placed in separate bins until the researchers are ready to begin an experiment.

As an Andrews biology professor, John Stout first started researching cricket behavior in the 1970s. In the 1980s, the research focus was expanded to include the neurophysiology of the crickets. The research continued to grow as faculty members Gordon Atkins and David Mbungu became interested in the project.

More than 30 journal articles have been published by the research group in journals such as the *Journal of Comparative Physiology A*, *Physiological Entomology* and the *Journal of Experimental Zoology*. Since Stout began his research, the main focus has been to understand the auditory system of crickets. While his research has been primarily concerned with female crickets, David Mbungu has begun working