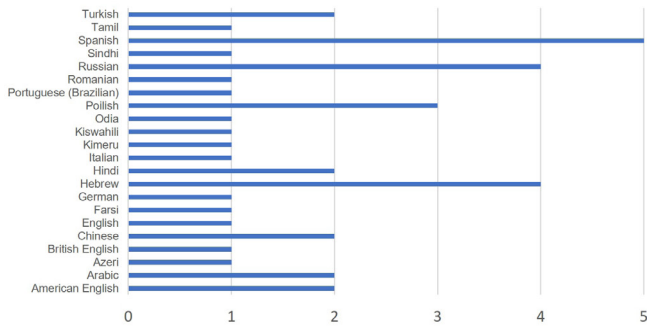
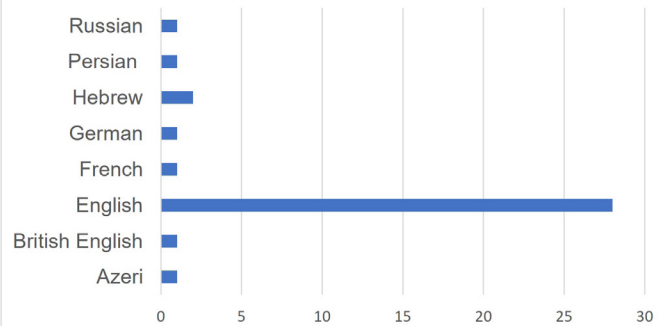


Influencing Languages in our Data



Target Languages in our Data



All languages reported by participants as their influencing languages (the sources of the accent) and their target languages (the languages spoken with a foreign accent).

implications for the relationship found between accent- edness and its impact. These findings help inform the provision of accent-related services with wider implica- tions for advocating for culturally diverse populations.

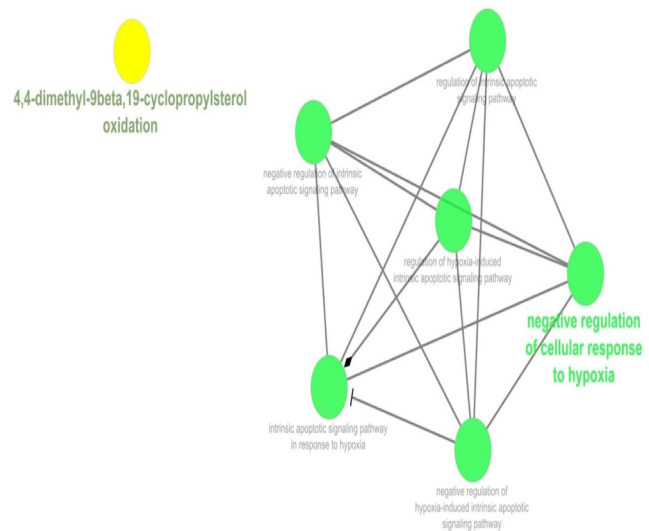
Research advisors Naomi Gurevich and Talia Bugel write: “Client-centered care requires us to consider the multi- faceted ways accents can affect speakers. Makaila’s research helps show that the relationship between the level of accentedness and its impact on speakers is situation-specific and not always direct, making a case for better understand- ing the sociolinguistic and sociocultural forces at play.”

Toward Improved Global Food Security: Uncovering How Tomatoes Fight Root-Knot Nematodes

Student researcher: Chingyan H. Huang, Sophomore

The nematode genus *Meloidogyne*, known as root-knot nematodes, are damaging parasitic worms that infect a plant’s roots and hinder its ability to take up nutrients. These nematodes may cost the world as much as \$100 billion in crop damages. Nematodes are typically controlled using pesticides, but the low efficiency and negative environmental impacts of chemical treatments call for the development of other *Meloidogyne* manage- ment techniques. In this study, we specifically examine the resistance response of tomatoes (*Solanum lycopersi- cum*) infected by *Meloidogyne*, because tomatoes are one of the world’s most economically significant crops with gross production earnings of \$88 billion, according to the FAO. Moreover, multiple studies have reported genes

that might confer resistance to *Meloidogyne* infection in different tomato plant cultivars. However, genetic pathways for nematode resistance in tomatoes merit further study due to the complex genetic backgrounds of different tomato cultivars. To examine nematode-resistance pathways, we curated transcrip- tomic profiling data collected using next-generation RNA sequencing from tomatoes infected with *Meloidogyne*. Curated reads from multiple studies will be pooled to estimate expression levels of different genes to identify common tomato genes that are significantly



Gene ontology diagram from a previous project, which found possible identities of differentially expressed genes by matching them to genes with known identities/functions from Arabidopsis thaliana. Groups of pathways that are expressed together are also highlighted. This diagram is a general representation of what a gene ontology analysis should look like.

up- or down-regulated in response to nematode infection. Resistance pathways will be matched to well-known pathways in model organisms such as *Arabidopsis thaliana* using gene ontology analysis. These pathways will also be explored using a mutual-rank co-expression analysis, which will detect gene clusters with similar expression patterns post-nematode infection. The findings from this study could reveal important stress response mechanisms in tomatoes, which could lead to the improvement of *Meloidogyne* crop resistance and begin to address issues with global food security.

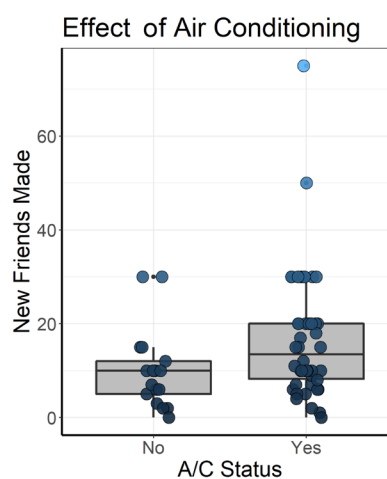
Research advisor Chao Cai writes: “Chingyan’s work identifying genetic pathways in tomatoes for resisting nematode infection will provide a comprehensive analysis synthesizing current evidence. The project will provide a better prediction of genes that are crucial for nematode resistance in tomato plants, which will help with the development of more efficient and environmentally friendly pest management strategies.”

Does Having Air Conditioning Affect Friendship Formation in the First Two Months of College?

Student researcher: Zachariah Hunt, Senior

Dorms lacking air conditioning are commonly touted as having a closer community because residents must keep their doors open to increase air flow. This would suggest that dorms without air conditioning would be more conducive to developing friendships. However, empirical studies on the subject were lacking. We administered two surveys to incoming students; one at the beginning of the semester, and the other two months in. We compared data from students in residence halls with air conditioning to data from students in residence halls without air conditioning. Sixty-three participants answered both surveys’ questions about the number of friendships formed and their residence hall, and completed a brief personality inventory.

We found that, on average, students in residence halls with air conditioning reported making more friends than their counterparts without air conditioning: $t(45.067) = 2.2947$, $p = 0.02646$. This discrepancy cannot be attributed to a difference in extroversion between the two groups because this was nonsignificant: $t(23.899) = -1.6846$, $p = 0.1051$. However, there were 2 participants in the air conditioning



A/C status vs new friends made. Notice the two significant outliers in the A/C Yes column.

group who reported a number of friendships made that was 10 times the values of most other participants. When these two were excluded from the analysis, the effect of air conditioning became nonsignificant: $t(30.708) = 1.8217$, $p = 0.07825$. Air conditioning may affect friendship formation, but our sample size was too small to be conclusive, and further research is needed.

Research advisor Alexander Francis writes: “Zachariah’s project developed out of his personal interest and experiences as a resident assistant. He used a pre/post survey approach to test conventional wisdom about how air conditioning affects friendship formation in the first few months of college. It was a lot of fun to work on, and we came up with what I think are some unexpected results.”

The Impact of Accessible Data on Cyberstalking

Student researcher: Elise Kwan, Sophomore

The continued advancement of technology and its new functions on both electronic devices and various social media platforms has unfortunately paved a new way for abusers to engage in cyberstalking, domestic abuse, and continued monitoring of partners without consent. Currently, there are programs and algorithms developed for the sake of helping potential interpersonal violence victims recognize digital abuse behaviors. Digital abuse types include cyberstalking, sextortion, nonconsensual pornography, and doxing. In sextortion, an individual will continue to bother another individual until they