Podcast Interview: Rob Voigt and Nicholas Camp

PNAS: Welcome to Science Sessions. I'm Taylor Gedeon.

Interaction between police officers and members of the public has been a major flashpoint in recent years, partly triggered by footage showing officers' use of force on suspects. Yet few researchers have systematically analyzed footage from cameras that officers wear on their bodies. Rob Voigt and Nicholas Camp, both of Stanford University, along with their colleagues used computational linguistic methods to analyze transcripts of police body camera footage. The authors focused on the degree of respectfulness in police officers' interactions with community members. Through statistical modeling of interactions at traffic stops the team found that police officers speak less respectfully to black than white community members; contextual factors, such as the severity of the offense and the location and outcome of the traffic stop, did not appear to influence the team's findings. The work, published in PNAS, earned the authors the 2017 Cozzarelli Prize in Behavioral and Social Sciences. I spoke with Voigt and Camp about their work. Voigt begins by explaining why the team focused on traffic stop interactions between police officers and the public.

Voigt: From the linguistic perspective the really interesting thing about these interactions is that they're kind of the medium in which police community relations play out sort of in the day to day. The way that most people will experience their relationship with the police is sort of through the medium of one of these interactions.

Camp: We know that these interactions are consequential. And we also know that white and African Americans report having different types of experiences with the police, report different attitudes, and that's a body of literature that goes back literally about a hundred years. What we didn't know was how these every day interactions, how officers actually communicate with the drivers that they stop.

PNAS: Camp explains the approach, beginning with a model to examine the language used during these interactions.

Camp: The first step was just getting human beings' perceptions of these interactions. We took transcriptions of these videos and we just pulled out thin snippets, thin slices of those interactions. And for each clip, we asked participants to say how formal is this officer being, how respectful, how polite, how impartial, and also how friendly they thought the officer was being towards the driver they stopped.

Voigt: We used a technique called principal component analysis to sort of compress these ratings and try to determine what are the underlying constructs that people are responding to. And what we basically found was that there seemed to be two major underlying constructs so that these ratings across these five dimensions could really be explained with reference to two ideas. The main one that ended up being the focus of the paper was what we called for the rest of the paper respect. Moving into the computational linguistic part of the paper, we used a machine-learning approach to train a statistical model that was capable of predicting the respectfulness of an utterance from the raw text of that utterance. At the end of the day what we have is this set of features and a corresponding set of weights. And so if we look at a new utterance, we simply count the features, the occurrence of those features, and we use the weights to estimate what we think the respectfulness of that

utterance would be. So at the end of the day we have an automatic method to look at the text of an officer's utterance and provide some estimate of respectfulness.

PNAS: Voigt and Camp applied the method to analyze body camera footage from the Oakland Police Department's traffic stops during the month of April 2014. The model controlled for variables that might influence the results, such as the location of the stop, crime rate in the area, and the gender and age of the community member being stopped.

Camp: So in general, participants thought that officers were being respectful, impartial, and so on. But we did find a racial disparity. So even though our participants didn't know the race of the driver who was stopped, they didn't know the race of the person the officer was talking to, they still picked up on differences in the ways that officers communicate with white and black drivers that they stop. So for example, officers were more respectful, more impartial, more polite, more friendly, and more formal when they were talking to white drivers than when they were talking to African American drivers. Another thing we can get from these results is looking at how participants' answers clustered together. And so doing this we found that really there were two things that explained participants' perceptions of these interactions. First was just generally how respectful were officers communicating. And second, whether officers were being more formal, or whether they were being more detached or cold. And what we find is, it's not really this sense of formality that's differing across race, it's really this difference in respect. So that gives us a single respect score that we're able to use to consider how these interactions are going and to consider the officer's language. And then what that lets us do is figure out what elements of language correspond with those respect ratings.

PNAS: Voigt hopes to apply his findings in the real world.

Voigt: We're trying to feed our research back into officer training and then ultimately measure its effects. The Oakland Police Department approached us to help them with their ongoing trainings about procedural justice for their officers. And so one of the things that we did is using the results of this study, compiled some sort of example interactions for officers to role-play during training. Hopefully this is kind of raising an awareness of this issue of the importance of language in the officers' minds as they're actually out on the street interacting with the community and so we're really looking forward to and hoping that we can measure some of the impacts of this training once an officer has had this training, or a certain number of officers in the department have had this training, do we see a kind of shift in this racial disparity that we found in this initial research.

PNAS: I asked Voigt and Camp how they felt about receiving the Cozzarelli prize.

Camp: It's such a tremendous honor and really it's a collective honor because this project is bigger than either one of us. It took a large interdisciplinary team, it took the cooperation of law enforcement, and so it's an honor to be recognized and its really exciting as we continue to do this interdisciplinary research that tries to make a real world impact. We hope it encourages other researchers to collaborate across disciplines. We also hope it encourages other police departments to think about how they can use this footage to improve police-community relations.

PNAS: Thanks for listening. Look for more Science Sessions podcasts at PNAS.org.