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"How We Go About Hearing Things" Personality Characteristics in the Voice

with Dr. Erik Tracy

Dr. Richard Gay

Welcome to 30 Brave Minutes, a podcast of the College of Arts and Sciences at the University of North Carolina at Pembroke. In 30 Brave Minutes, we'll give you something interesting to think about. I'm Richard Gay, Dean of the College of Arts and Sciences and joining me today are Dr. Ashley Allen and Dr. Joanna Hersey, both Associate Deans in the College of Arts and Sciences. Today we'll be joined by Dr. Erik Tracy, who joined the faculty at UNCP in 2011. Now get ready for 30 Brave Minutes.

So, Dr. Tracy, please take a few minutes and tell us about yourself and your research.

Dr. Tracy

Well, as you said, I came here in 2011. Before coming to UNCP. I was a lecturer for five years at the Ohio State University. And I taught many of the same courses at Ohio State that I'm teaching here, such as Introduction to Psychology and Sensation and Perception. The reason that I was a lecturer at Ohio State is because I got my Ph.D. there in Cognitive and Experimental Psychology in 2006, and also, I graduated from the University of Buffalo in 2000 with my Bachelor's degree in Psychology.

So, to back up a bit, what I did my dissertation in was looking at how people might speak words a little bit differently, and then how we can recognize those variants of the word, and that might have some real-life implications. Say, for instance, you're speaking to somebody who maybe had a little bit too much to drink, and they're slurring their words and they're not pronouncing the words as clearly as they could. Would you still be able to identify what that person is saying? And the second main research project that I'm interested in is still in speech perception but here I'm looking at how people recognize and identify personality characteristics of the speaker. So, say, for instance, that somebody calls you on your cell phone, it's a wrong number. So, you don't have that number programmed in your cell phone. You've never seen this person in your whole life. So, you answer the phone, say hello, you realize the person is calling the wrong number, you hang up, and maybe you only talk to that person for ten or fifteen seconds. But even in that short period of time, you're able to identify some characteristics about that speaker. So, for instance, if they are an older person or a

younger person, if they're male or female, or specifically what I'm interested in is if they are gay or heterosexual.

So, what is it in terms of what the person is saying that leads us to those decisions? And I should clarify here that it may be a lot more obvious if the person is very upfront and says something about themselves, or talks about something that may be associated with older people or younger people, or gay people, or straight people. But I'm not looking necessarily at the words that they're using. Rather, I'm thinking about investigating how they actually say those words and how we can pick up on some of those cues, those verbal cues and what they are saying in order to make that distinction. What I'm currently working on, and Ashley kind of knows about this because I talked to Ashley a lot about the stats behind it and whatnot, is what personality characteristics we also associate with gay and heterosexual speakers. So, when people talk, we can identify certain emotions or personality characteristics, like is the person sad? Or I should say, are they perceived to be sad? Are they perceived to be angry or happy? And I wanted to know is there some intersection between sexual orientation and emotion? So, are gay people perceived as being both gay and happy, for instance? Are heterosexual people perceived as being heterosexual and sad, for instance? So, I was looking at this intersection between perceiving emotions and also perceiving sexual orientation.

So, in my paper what I was interested in is, from my earlier research I had my sample of speakers, my sample of talkers. And so, I knew from previous research which talkers were gay, which talkers were heterosexual, and then on top of that, which talkers were perceived as gay, and which talkers were perceived as heterosexual. And those two things could be very different from one another. So, for instance, I had one talker who everyone said 'yes, that talker I perceive as being gay,' when in fact that talker identified as heterosexual.

So, within my study I selected four groups of talkers. So, I had actual gay talkers who were perceived as gay, and then actual gay talkers who were perceived as heterosexual. And on the other side, actual heterosexual talkers that were perceived as gay, and then actual heterosexual talkers who were perceived as heterosexual. And then I presented those talkers to listeners. And in the first phase of the experiment, I just had the listeners break the talkers along various personality characteristics. So, in no time in the experiment where they told, this is a gay talker or heterosexual talker. Sexual orientation was never mentioned at all. I just said here are some talkers, rate them on the traits. And what I found, I looked at about eight different traits or so, and the talkers who were perceived as sounding gay, whether they were actually gay or actually heterosexual, but if they were perceived as sounding gay, they were perceived as sounding more confident to listeners. They were perceived as sounding more stuck up to listeners. And for the talkers who were perceived as sounding heterosexual, they

were perceived as sounding more sad and more angry, compared to the talkers perceived as sounding gay. So that was the first result that I had. I'm like, okay, there are these personality characteristics.

So, then my second thought was, well, what if I actually tell the listeners the actual sexual orientation of the talker? So, if they know that they're going to hear a gay talker, would that perhaps lead them to thinking that the gay talker is more stuck up or more confident, or that the heterosexual talker is more angry and is more sad. And so, I ran that experiment, and it turned out that that had no effect at all. If people knew the actual sex orientation of the speaker, it didn't matter their perception of their personality characteristics.

And then a third variation that I did was what if I told the listeners a lie? So, they hear a gay speaker, but I'm telling them it's a heterosexual speaker and then they still need to make this personality judgment? Would there be a difference there? And it turns out that there still was no difference. So regardless if they didn't know they did know, or they were falsely told, it made no difference about their personality judgments. So, it seemed that people were totally dismissing, not paying attention to the labels at all, but rather they were just using the speech itself in order to make those personality judgments.

And in order to arrive at those eight choices, what I did as a pilot study is I had people listen to the speakers and then just write down anything about the speaker itself. So, it was just open ended at the beginning. Whatever you want to write down, write it down. And so, from that point I kind of picked out some common personality characteristics. And so, it's from that pilot study that I came to those eight different personality characteristics. So, they weren't just random ones. They were ones that were tested before.

Dr. Gay

And it's interesting to see how that one study feeds into the other study, right? There's this preliminary study to come up with a list of personality traits...

Dr. Erik Tracy

Yes.

Dr. Gay

...and then you use for the next study, and it's interesting to see, at least for me to see how there's a process involved in this trying to respect the integrity of your results. And I'm a little bit curious about your sample size too.

Dr. Erik Tracy

I think like there are upwards of maybe 300 or so students, or participants, I should say, in that, so I think a fairly large sample size. I think a large enough sample size to please the reviewers who are looking at the paper currently. So, all of this I actually, the personality paper I wrote up and submitted back in February or so to a journal. It's actually a special journal for a professor I studied under in graduate school. He retired last year. So, they want to do a special journal dedicated to him and research related to his ideas. So that's what kind of motivated me to really get this paper off the ground, because I've been sitting on the data for a while. I'm like, well, I just have to start writing it up. And they accepted the abstract. So, they're like, the abstract seems worthwhile enough for you to go ahead and write the paper. So, crossing my fingers here.

Dr. Richard Gay

Excellent. We'll all cross our fingers with you, and we all look forward to coming out in publication.

Dr. Erik Tracy

Thank you!

Dr. Ashley Allen

I know you have a really active research lab with students involved. So, what is it that the students do in the research lab, and do they have a role in this process? What does that look like?

Dr. Erik Tracy

The students usually are running the actual experiments themselves. So, I usually bring research assistants in. I train them on the experiment itself, so I tell them a little bit of background about the research, and they actually sit through the experiment, so they have an idea about what the participants are actually going to be doing within the study itself. And then from that point, they do a lot of the legwork of bringing participants in, reading them the instructions, putting them through the experiment, answering any questions they have, and then debriefing them at the end. I try to have the lab as active as possible with maybe three or

four research assistants going at the same time, working with one another, so we can try to get as many people within the study as possible. So, the research assistants are really good at getting that big sample size that we kind of mentioned earlier. So, I'm very indebted to my research assistants.

Dr. Ashley Allen

Now, I know they can't know the hypotheses sort of going into this study, right, because they're serving as the experimenters and such. But when you do have your findings, what has surprised them or surprised you the most when it comes to some of these research findings that you've gotten?

Dr. Erik Tracy

I think they were just surprised about which personality characteristics were associated with which types of speakers. So, I think that was really interesting to them.

Dr. Ashley Allen

Yeah, no, that's fascinating, though, and just going back to your original experiment and this idea, why is it that someone can hear a phoneme and more often than not, better be able to predict sexual orientation? That just seems crazy.

Dr. Erik Tracy

So, I can say two things to that point. So, number one, one of the papers that I'm working on right now, is I wanted to know which phonemes, which letter sounds, people might be better at than others. So, I looked at all of the vowels and all of the consonants in my corpus, and I just presented those to listeners and had them do gay or heterosexual. And what I found is people are really good at vowels. It didn't matter the vowel. People were able to say, this is the sexual orientation of the individual. When I gave them consonants, they weren't as good. The one consonant unsurprisingly that they were good at was the "s" consonant, because there is this stereotype that gay men lisp. So, people are good at distinguishing gay and heterosexual speakers upon hearing "s" and some other consonants as well. And a lot of people before me have looked at "s" and what it is within "s." There is a lot of higher energy within "s" that gay men produce. That higher energy is what the listeners are tuning into in order to make that distinction. What I'm hoping to do, though, given all these perceptual findings, I'm trying to partner with one of my colleagues out in Utah who has a lot of graduate

students in linguistics, so they could look at all of these different sounds and see where there are differences in the sounds. And then can we link up those physical differences in the sounds with the perceptual data?

Dr. Richard Gay

I find this so fascinating in the sense that we have a very interdisciplinary question here, right? I mean, you're in Psychology. You're clearly working closely with linguists. That was one of the questions I had early on, is how much work you've done with linguists to tease this apart.

Dr. Erik Tracy

Yes.

Dr. Richard Gay

You've worked with statisticians as well here to help you with this project. I think those collaborations can often be very fruitful. I was curious if the phonemes or the words, et cetera, have been analyzed by a computer in any way to see the different wavelengths, to see if there's something in that that's being picked up on.

Dr. Erik Tracy

Hopefully this current project with the people from Utah, they can use different programs, computer programs or whatnot, to look at acoustic differences within the words themselves.

Dr. Ashley Allen

Okay, so I have one more thought, with the vowels. Is it possible that it's just easier to pick up on pitch variation with vowels?

Dr. Erik Tracy

Yes, I would think so. So, I think there's probably more variation in pitch with vowels. And I would also say my hunch would be, without actually doing the analyses, that vowels are probably a little bit longer in duration than most consonants. So, people just have more information overall within the vowels to make that distinction versus like a very short twenty

millisecond sound to make that decision. The longer the duration, the more you could perceive the differences in pitch variation.

Chancellor Cummings

This is Chancellor Robin Cummings and I want to thank you for listening to 30 Brave Minutes. Our faculty and students provide expertise, energy, and passion driving our region forward. Our commitment to southeastern North Carolina has never been stronger through our teaching, our research, and our community outreach. I want to encourage you to consider making a tax-deductible contribution to the College of Arts and Sciences at the University of North Carolina at Pembroke. With your help, we will continue our impact for generations to come. You can donate online at www.uncp.edu/give. Thanks again for listening. Now back for more 30 Brave Minutes.

Dr. Richard Gay

I'm curious about how you selected both the phonemes and the words that were used in the study. For example, I could imagine a situation where you just have somebody say the words that seems very fake and contrived. So, I was curious if you had them read a paragraph and then chopped words out of it, as a way of getting a more natural intonation and the like.

Dr. Erik Tracy

When I first did this research, my original thought was, based on the literature, that people are going to use "s". So, let's choose words that contain an "s" sound, like soap or niece or sad, for instance. And so, I then thought, well, people are going to know because I need to then say, are you heterosexual? Are you gay? To come in and read these words. And then people then might know, oh, there's a lot of "s" words here. So, they probably are looking at the stereotype of gay men lisping. So maybe I'm going to talk a little bit differently knowing what the experiment is about. So, then I included a lot of filler words to try to mask all of these "s" words within them. And so, I came up with a list of about 100 words. And then I had the participants read the word, the list of words three times. So, the first time they came....all at once...so, the first go around, they're nervous. They have this headset on, they're in this weird lab, someone's looking over their shoulder as they're repeating these words. They're really nervous. But then by the third time they're bored. They want to get out of there. They just want their research credit. They don't care. So, they stop being nervous and they start talking more naturally. So, a lot of the speech samples that I've gotten, I take from the third instance that they had because those are more natural sounding words than the first ones.

Dr. Richard Gay

It just shows there's so many complex things to consider when putting together a study like this. I mean, many people probably would have never thought of that, but it is an interesting factor in the process.

Dr. Erik Tracy

Yes. One technique that speech researchers have used is to actually kind of create a mini game, and then have the person be recorded during the game. So, they're playing the game with the experimenter, and then during the game, they have to say certain words, and the participant thinks, oh, it's all about the game and what I'm getting at the end. Where really, I'm just interested in you saying the words. I don't care if you're winning the game or losing the game. So that could be another avenue that I could do in the future.

Dr. Richard Gay

I'm sure you'd get lots of volunteers from the students. You spoke earlier a little bit about how students help you with your research in the lab. Can you talk to us a little bit about how you're able to combine your research with the courses you teach here at UNCP?

Dr. Erik Tracy

Yes. All of this research on speech perception is greatly tied into my Sensation and Perception class, where students learn how we go about seeing things, how our visual system works, and then also how our auditory system works, how we go about hearing things. And then I have a whole three lectures or three class periods on speech perception to kind of really get into the nitty gritty. I get very excited about it, and I hope my enthusiasm carries over to the students as well. And I do bring up a little bit of my research within the speech perception lecture, where I tell students we're perceiving all these different things, but we can also perceive personality characteristics from the speech. And I try to tie that back in the class to visual perception as well.

So, there's a lot of research also out there that the way that we move, the way that we walk and carry ourselves can also tell people about our characteristics, male or female, the activity that we're doing, how we're feeling, that sort of thing. So, I try to draw that connection to students and say, "hey, you might not know it, but the way that you walk and the way that you talk, people infer things about you." So that's how I try to draw in the class with then actual

research things, so students are like, "oh I get it how your research comes back to what we are actually learning in class."

And another class that I teach is the History of Psychology, and what I've done in that class is try to pinpoint all the different areas in psychology that the faculty members are interested in or are teaching. So, I think at one point, Ashley was teaching a course on personality theory. And so, I have a whole lecture in the history of psychology about where those different personality theories came from, like Freud and Eysenck, and different ways of thinking about personality. And there is a whole lecture about the history of social psychology and social influence and social cognition. So, I tried to have the History of Psychology be relevant to the students so that when they take another class with Dr. Allen, with Dr. Charlton, with Dr. Regan, they're like, "oh, this thing that they're talking about," I can link back to where it fits in with the greater context in the history of psychology.

Dr. Richard Gay

I think there is a lot to be said about the nonverbal communication, and it's interesting to see how you incorporate that into your courses. You know I am trained as an art historian, so I am very interested in non-verbal communication. I'm sure there are lots of opportunities for collaboration.

Dr. Erik Tracy

Yes, like you said before, this research can go in many different directions. So, within psychology the social psychologists like Dr. Allen, Dr. Charlton could say, "oh, what about the stereotyping"? And the cognitive psychologists like me and Dr. Collier could say, "what are the computations like in the mind"? The linguists are thinking, "oh, what is it in the speech itself"? And then the statisticians could be like, "we have all of this data. What are the best ways to go about analyzing the data"? So, lots of different fields can work together to come up with these answers.

Dr. Richard Gay

So, do you have an idea of what direction the field is going in? Are there any hot topics in the area of research?

Dr. Erik Tracy

A lot of the things that I've seen lately, is different languages being investigated. The older research that was done was just done with American, British, and Canadian English. But in the past couple of years, what I've seen is that now researchers from all over the world, from a lot of different languages are looking at it. And one example I could think of, I think a paper from, like, last year maybe, or the year before, looked at Mandarin Chinese. So, I think to answer your question, it's going to, are there cross language similarities, differences? If you're an English talker, and you hear maybe Mandarin Chinese and you don't know what they're saying, could you identify the sexual orientation of the speaker and vice versa? So, I think there's a lot more kind of cross-cultural work going on.

Dr. Richard Gay

Lots of possibilities out there that's for sure.

Dr. Erik Tracy

Yes, yes!

Dr. Ashley Allen

That's wonderful.

Dr. Richard Gay

Oh, I have one more question really quickly here. Earlier you mentioned that your lab assistants get people to a computer, and then people do the questionnaire or participate in the process in front of the computer. So, I'm wondering, is there a reason why this can't be done remotely? Is there some control factor that's done in there. Is there a way you could just throw this open to the web and collect gobs of data, or does it need to be in that controlled environment of your lab?

Dr. Erik Tracy

Yes! So, there is, I think Ashley's probably aware of it, Mturk, I think through Amazon, is it, Ashley?

Dr. Ashley Allen

That's correct.

Dr. Erik Tracy

So, you could put a lot of these experiments online, and then have people from all over the world come and do the experiment and they get paid some amount of money from it. I haven't done that yet. And the reason is, especially when people are hearing just a single phoneme, it's very small, it's very specific and exact. And if someone's sitting at home at their computer, I don't know what the listening environment is like. Are they wearing headphones? Is someone talking in the background? And if they're not paying attention, they could miss that small, tiny letter sound, and not respond to it. So, I like it, having it in the lab where it is quiet. I know that the headphones that the participants are using are high quality headphones, so I know that the sound is going to come out of it. Maybe if it was something longer, like paragraphs, then I could do it online. But something so small, I want it to be a lot more exact and I don't think I can get that precision so to say if I'm trusting people at home.

Dr. Ashley Allen

Probably not. We lose so much of our internal, that control, to be able to show internal validity and then if our effects are smaller, it's really hard to tease through all that noise and error and stuff, but yeah, that's a good point.

Dr. Erik Tracy

Yeah. So, it's just that lack of internal validity, it's just that lack of control that doesn't make me want to branch out in that way.

Dr. Ashley Allen

Eric, thank you so much. You've given us so many ideas. I've certainly learned a lot.

Dr. Erik Tracy

You're welcome, thank you!

Dr. Richard Gay

Dr. Tracy, thank you so much for joining us today. You've given us a lot to think about. It's really exciting to see the work that's being done across the College of Arts and Sciences and it's really great to learn more today about what our colleagues in the Department of Psychology have been up to. So, thank you so much for the work you're doing, the research you're doing, the work you're doing with our students, and I hope you will share the podcast far and wide.

Dr. Erik Tracy

Yes, yes. No, thank you for having me on.

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