Questions for Prof. Chris Vecsey

Thursday, August 6, 2020 12:00pm EDT

LIVE QUESTIONS

How does addition of facial hair affect recognition of someone?

Submitted: Sheila W. '65

Our recognition is relatively malleable – if someone who used to be clean-shaven has grown a beard since the last time you saw them, their face alone may be more difficult to recognize. But other cues like their voice, clothes, how they walk, and what they are saying to you will usually quickly allow you to identify them. And we then scan their "new" face and file it as an alternative appearance for the same identity in your memory.

However, this change to someone's face can be disconcerting, and as I found out, especially so to young kids. When my daughter was maybe 2 years old, I took part in a pogonotomy, or beard-growing contest. For ~4 months I never shaved, and my beard got pretty robust. Because my beard grew gradually, my daughter had no issues with recognizing me. But then, after the contest, I shaved it off at night and the next day went to pick her up from daycare with a clean-shaven face. Normally, she would come running right over to me when I arrived, but I remember saying hello to her while she was sitting on the floor playing, and she refused to even look at me. The disconnect between seeing essentially a stranger speaking with my voice must have been very unnerving for her.

Is there a single publication that summarizes all the research to date on human ability to do facial recognition. I am familiar with Loftus' work, but none other.

Submitted: Wendy R. '63

I know of a nice review of the neuroanatomy of face recognition by Grill-Spector (2017) in Annu. Rev. Vis. Sci., but not one all-encompassing paper about human face perceptual abilities.

Might it be beneficial for a criminal attorney to ask a court to compel an examination of an eyewitness who claims he or she clearly saw the face of a crime perpetrator in order to investigate if the eyewitness has either a neurological/physiological deficiency? Assuming the state of knowledge is not there to draw any conclusions about an eyewitness' physiological capacity, might the state of the knowledge be available in the not too distant future? As a follow up to this question. when there is an eyewitness to a crime claiming visual acuity, would it be informative to the accuracy of eyewitness testimony to know the angle of any lighting at any crime scene?

Submitted: Wendy R. '63

Testing for major deficits in face recognition (especially in recognizing faces from a variety of races and ethnic groups) seems important, and would be pretty simple to administer. And, in fact, some people also live much of their life without any knowledge that they have face-blindness (although awareness of this condition has improved, making this less likely nowadays).

As for lighting, I would imagine that lighting pointing at the suspect's face from the front without shining in the witness' eyes would be ideal conditions, but beyond that I'm not sure. From what I heard from a friend who

studied eyewitness testimony, a bigger problem than the witness' actual vision is that the way that witnesses are asked about the identity of the person they saw can be very manipulative and biases the witness towards picking a particular suspect.

How did they determine that it wasn't the actual movement of the light (dot or bar) vs the shape? It was when they were moving the card out of the projector that the cat neurons fired
Submitted: Regina N. Carbon rcarbon14@gmail.com

The researchers Hubel & Wiesel tested this possibility, and found that the "simple cell" responses in the visual cortex were not sensitive to movement. However, other cells in the visual cortex ARE tuned to movement, and typically only respond to movement in one direction but not the other.

PRESUMBITED QUESTIONS

Why do some people feel it's easier to remember faces (after meeting someone) than remembering names? Why are some people especially good remembering faces or the opposite (for ex. have heard someone say they'd remember a face even years later even w/strangers vs. people who have face blindness and maybe can't recognize even themselves?)
Submitted: Alexandra T. '90

Faces carry more importance than names - in most situations, just recognizing a face and knowing that you trust that person is more important than knowing their name. Also, faces are complex, and provide more information than the single cue of their name. There's also a difference between just recognizing a face and knowing the context of where you have seen that face before, which adds nearly as much complication as trying to dredge up their name. A lot of people are great at simply recognizing faces, but can't remember where they knew the face from. However, there have also been studies looking at our ability to recognize new faces vs. new names and we're actually worse with faces. However, once we are familiar with a face, we tend to be able to recognize it very robustly.

How does your research connect to Oliver Sacks - which looks at damage to some extent?
Submitted: Christine P. '78

Oliver Sacks was a neurologist who wrote amazing books about some of his case studies - I would highly recommend reading his work. He himself had prosopagnosia, or face-blindness, and had had that condition since birth, although he didn't realize it until he was middle-aged. This is one of the fascinating things about perceptual disturbances – you may never know about it, because you assume that the way you see the world is just the way everyone else sees the world. Prosopagnosia can also be produced by disease or injury that disrupts the parts of the brain responsible for face recognition.

I have always had great facial recognition. In the last few years, pulling up the name that goes with the face has become more difficult. Can you say anything about the difference between the 2 abilities?
Submitted: Ann D. '70

As I mentioned above in response to Alexandra T., passive recognition is very different than actively retrieving a piece of information like a name. If instead I just showed you a name and asked you if you recognized it, you'd do great at that task! But trying to retrieve a name from the context of seeing a face is a much more difficult operation.

Will he speak at all to Prosopagnosia?
Submitted: Wendy R. '91

Yes, please watch the last 10-15 minutes to see some discussion

Is there a difference between 2 and 3 dimensional facial recognition (i.e. in person vs on screen).
Submitted: Jeffrey M. '90

A study by Eng et al (2017) found that 3D faces are easier to identify than 2D, but only when upright, not when upside down. This suggests that the added information in 3D face renderings improves more holistic analysis of faces, but when face recognition is based more on individual features (which is known to happen with inverted faces), 3D rendering doesn't help much. This makes sense, as 3D rendering may allow for the brain to better understand how all the features fit together structurally within the face.

How does the aging process impact this ability?
Submitted: Kathleen R. '04

There have been multiple studies of this, most of which suggest that, like many cognitive abilities, there is a mild decline with normal healthy aging. One by Flicker et al (1990) suggested that issues with face recognition in healthy elderly people had more to do with initial perception speed and attention rather than an ability to remember faces. On the other hand, Alzheimer's disease and other forms of dementia can have dramatic effects on the ability to recognize faces.

Is face blindness an absolute, or are there gradations in severity?
Submitted: Lynn F. '68

There are definitely gradations in severity – this can be very different case-by-case.

Can he speak more about his other research regarding memory and sleep, too?
Submitted: Molly G. '96

I'd be happy to do a separate talk on one of those topics!

Does the lack of Sleep make neurons weak? Can that eventually lead to motor neuron disease like ALS?
Submitted: RoopaS. '02

There is no evidence that I'm aware of that lack of sleep is a factor in the development of ALS or other motor neuron diseases, although many neurodegenerative diseases do RESULT in sleep disruptions, including ALS. Additionally, there ARE some correlational studies suggesting a relationship between short sleep and the development of Alzheimer's disease later in life. But this connection is not super solid as of yet.

Theoretically, which flight pattern should have a bigger impact on the timing and quality of sleep: flying east from the US to Africa, or flying west from Africa to the US? And what factors influence this "jet lag".
Submitted: Shane D. '93

For the majority of people, trying to advance our internal clock is harder than delaying our clock. So, traveling East is more difficult than traveling West, although that's not true for everyone. Jetlag also depends on the

timing of travel within the day, whether you are able to sleep during transit, what type of light exposure you receive at different times of day during the transition, whether you take naps, etc.

Is forgetting faces a sign of dementia? Does it have anything to do with right temporal epilepsy?
Submitted: Debbie M.

Having difficulty learning and remembering faces is associated with several forms of dementia, but a mild decline in facial recognition occurs with normal healthy aging as well, so it is not a clear indicator of dementia. There are also other conditions, such as prosopagnosia and prosopamnesia, that result in issues recognizing faces, which are very different from dementia. The areas of the brain specifically dedicated to face recognition are located in the temporal lobe (which is located in both hemispheres). Epilepsy often affects the temporal lobe, and therefore can sometimes cause issues with face perception. Epilepsy in both hemispheres can affect aspects of face recognition.

Can recognition improve or does ability stay the same?
Submitted: Victoria K. '88

Yes, you can absolutely improve with practice, just like people can become better at recognizing car models or animal tracks, etc. A famous example of the ability to improve deals with the phenomenon that people tend to be better at recognizing faces that are of the same race as themselves. This has been shown to be due to people's tendency to have greater familiarity with others of the same race. But repeated exposure to faces of other races leads to improvement in recognition of those faces, showing that we are not hard-wired this way.

I imagine everyone wants to know: what is happening to the brain with faces that are masked? Can I --or maybe I should write "can somebody" --successfully rob a bank now without being facially identified?
Submitted: Wendy R. 1963

Face recognition is certainly more difficult with people wearing facemasks, as the viewer is presented with only an incomplete set of puzzle pieces. But we also have lost the social components of facial expressions, which are now much more challenging to express and identify with masks. As for the second question, face recognition software (as you might expect) fails quite often with masks, although some programs only have failures of 5-10%, which is pretty good! I believe masks existed before COVID-19, so masked bank robberies are not exactly a new concept. However, security and camera resolution and face recognition software are all far better now than they were years ago, so robbing banks seems like an especially poor life choice nowadays. Don't do it, Wendy!