

Face to Face

Prosopagnosia Research & Community



This summer marks our third edition of *Face to Face* – how time flies! We hope that, thus far, you have found these newsletters to be informative and useful, and we continue to encourage feedback of every kind. Your voices are the foundation of this community and we greatly value your involvement in our ongoing research efforts. Enjoy, and thanks for reading!

-Prosopagnosia Research Center (faceblind@faceblind.org)

ERP Studies of Face Recognition in Prosopagnosia

In a new, London-based research project, we use EEG methods to find out which aspects of face processing are impaired in developmental prosopagnosia. This research is led by Professor Martin Eimer, Dr Brad Duchaine, and Dr Angela Gosling, and is conducted at Birkbeck College, University of London.

Face blindness comes in many forms. Face recognition problems can be the result of brain injury (acquired prosopagnosia), but very similar problems can also affect people without any evidence of brain damage. Developmental prosopagnosia (DP) is often present from an early age and can run in families. However, this does not necessarily mean that all people with DP have the same type of face recognition deficit. In fact, it would be quite surprising if this was the case. Our ability to recognize familiar faces is a complex cognitive achievement that depends on a number of successive face processing stages. The visual information from a face is picked up by the eyes and then sent to those

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The Gifts of Faceblindness

by Heather Sellers

My family wasn't like other families. My father wore women's clothes. My mother hid, sometimes for days, in her closet. She claimed the phones were tapped. She disappeared, sometimes for days. In all this chaos, I didn't know what to believe. I struggled to make friends, to be in the world. Frankly, I struggled with everything.

I escaped into books, somehow made my way to college, and eventually, I became a writer and a teacher. I spent a lot of time alone. Usually, I had a long distance boyfriend. Endless confusion plagued me. I figured my troubles recognizing people had something to do with my chaotic upbringing. When I couldn't follow a movie or figure out who was talking to me, secretly I worried I was mentally ill. Around campus, as a student and later a professor, I was known as difficult, shy, and aloof. It was hard to maintain relationships.

Then I set out, at midlife, to write a book about my childhood. While working on the project, I happened across two words that changed not only the course of my book, but the course of my whole life: face blindness.

When I read those two words, bells went off. In an instant I saw everything, for the first time, clearly.

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TELL US!

Are you the parent of a child who is faceblind? Do you remember vivid experiences dealing with faceblindness from your own childhood? Share with us the challenges your child is facing at school in comparison to at home, or your own stories from your youth and years in school.

Please email us at faceblind@faceblind.org.

parts of the brain that are responsible for visual perception. There is good evidence that circumscribed regions of visual cortex are specialised for face perception. However, face recognition requires more than just the visual perception of faces. To identify a face as the face of a particular individual, the perceptual description of this face that is the result of visual processing needs to be matched with other information about that person that is stored in memory. To be able to recognize a face image in front of you as the face of Tom Cruise, it is not enough to have intact face perception. You also need to have prior knowledge about the features of Tom Cruise's face in visual memory, and this visual memory representation needs to be linked to his name, profession, and other biographical information about Tom Cruise in semantic or episodic memory.

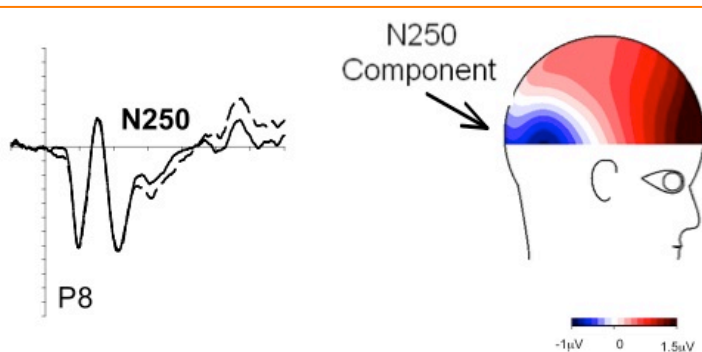


Problems with face recognition will result when one or more of these face processing stages are impaired. Deficits can occur because face perception does not function properly, because stored representations of familiar faces in visual memory are incomplete or absent, or because semantic or episodic information about a particular individual is not accessible. In our research project in London, we want to find out more about which cognitive and brain processes produce face blindness in different people. To identify these processes, we record EEG and measure event-related brain potentials (ERPs) in people with prosopagnosia, and in people with intact face recognition abilities. Our participants wear electrode caps while they perform different computer-based experimental tasks that are designed to test face perception, face recognition, or face memory (*see picture at top right*). ERPs are ideal to identify which face processing stages are responsible for face recognition deficits, because they measure to a single millisecond when a particular brain response is activated.

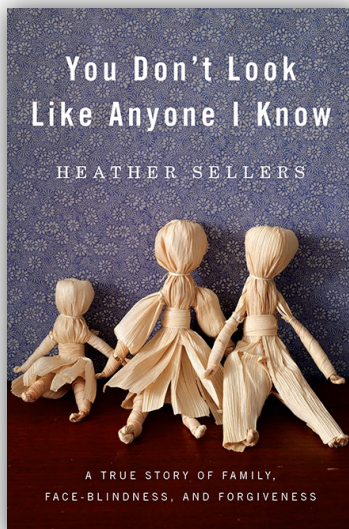
ERP research with participants with unimpaired face processing from our lab and other EEG labs around the world has identified specific brain responses ("ERP components") that are linked to different face processing stages. For example, the N170 component (which owes its name to the fact that it is elicited 170 milliseconds after a face appears on the computer screen) is a marker of face perception. The N250 (which emerges 250 milliseconds after face presentation, *see picture bottom left*), is particularly important, because is triggered specifically by known famous faces. We believe that this component is triggered when visual descriptions of familiar faces are activated in visual memory. Because we now have a good idea what different ERP components mean in people with intact face processing abilities, it is important to find out whether these components are present or absent in people with prosopagnosia, because this can tell us which aspects of face processing are intact, and which are impaired.

In the past few months, we have tested a group of volunteers with DP in our EEG lab, and have already gotten really interesting results. We found that most (but not all) of our participants have N170 components that are very similar to those measured in people with normal face processing abilities, which indicates that early stages of face perception are working fine. For half of all DPs tested so far, famous faces also elicit an N250 component, suggesting that these faces activated representations of familiar faces in visual memory. What really surprised us was that N250 components were triggered by famous faces even when they were not consciously recognized! This "covert" face recognition suggests that for quite a

few people with DP, visual face memory is still functional, and their impairments result from a lack of communication between visual brain areas and areas where episodic and semantic memory traces are stored.



Our ERP research into which aspects of face recognition are impaired in people with DP is only just beginning. We are always looking for new volunteers. If you live in the Greater London area and are interested, please contact Angela Gosling at: A.Gosling@bbk.ac.uk.



My memoir of childhood turned into *You Don't Look Like Anyone I Know*: a memoir of family, face blindness, and forgiveness (Riverhead, 2010).

As I went through the process of researching face blindness, discovering the Prosopagnosia Research Center at Harvard, and getting diagnosed, I wrote about my experiences. Slowly, I untangled my neurology from my parents'. And I wrote about that, too.

When my book came out in October, the media wanted to focus on the sensational aspects: "You don't know your own mother?" "You can't recognize yourself in a mirror?" (Cue creepy soundtrack.)

Sure, these profoundly disturbing recognition failures occur for many of us with prosopagnosia. But in telling my story, I wanted to show what is actually most difficult and painful about this disorder: the struggle to completely trust one's own experience of the world. My book isn't a sound bite kind of a book; our disorder isn't a freak show. Prosopagnosia is subtle and complex.

It eats away at one's ability to feel certain, to trust, to know. It's not the occasional disastrous mistake that defines the condition. Though those moments are devastating for a prosopagnosic and loved ones, it's daily life's constant tiny challenges that exemplify what's truly difficult about living with this disorder.

For example, last night, at the grocery store, I was so happy to recognize my neighbors Susanna and Josh with their little baby. Couples are easier to discern than singles because there's double the information, a whole context. As I gushed my hellos, cooing over the baby, my neighbors stepped back, and looked at me as though I were a stranger. Then, they turned away. I felt awful—rejected, stupid, nuts.

Of course it wasn't Susanna and Josh at all. It was some random people who just happened to have the same style, haircuts, and demeanor, and same type of fat little bald baby as my trendy neighbors. Inside, I might feel I've just fallen off a cliff. But from the outside, you'd just see a middle aged woman in a nice dress, standing in produce, staring at the floor.

I'd set out to write about my family. Instead, I discovered a mystery story. *You Don't Look Like Anyone I Know* is about how I solved the case of this strange disorder, prosopagnosia.

But what surprised me the most in writing this book is how I realized that in spite of all the chaos and challenges, I received all these gifts. As I wrote, I discovered that somehow love and affection had snuck into my troubled family; my parents loved their kids.

And, as I finished my book, I came to see that prosopagnosia has changed my life for the better. Ironically, the disorder that isolated me profoundly for much of my life has become my vehicle for engaging in the world. Now, when I meet someone new, I have to say right up front, "I'm prosopagnosic. I'm likely to not recognize you next time we meet. It would be helpful if you'd always let me know who you are."

And you know what? Everyone steps in. People may not understand the disorder right out of the gate, or ever, but they truly want to help. What my mother couldn't teach me—that people are good and mean well—has been given to me by prosopagnosia!

Nothing has changed my life more than having to ask my fellow humans for help. I have to make myself so vulnerable in that moment. What happens is nothing short of miraculous. A moment for potentially deep human connection is created. At last, I have a way to be in the world, one that's real, and honest. Weird, yes. But at last, I have real contact with others.

It sure didn't feel like a gift when I was first coming out. When I was first coming out, and people asked the typical dubious questions or completely misunderstand, saying, "I have that, I'm terrible with names, no worries," I would get panicky, feel disbelieved, and withdraw. At first, I often felt like it was just all too hard.

But slowly, I taught myself to not freak out in those moments. Instead of feeling rejected, I let myself stay connected to people. I began to give everyone five, six, seven times to “get it.” I no longer let the other person’s “not getting it” break our connection. After all, it had taken me nearly 40 years to figure out face blindness and I have it!

With practice, I have learned a new kind of patience and openness. Little by little, my life has been transformed. I am no longer ashamed of my extraordinarily bizarre childhood and I don’t apologize for my face blindness. When I am confused, I don’t implode; I’ve learned to ask for assistance. If someone doesn’t get it—and why would they—it’s okay. There will be another chance to explain.

Prosopagnosia is my guide, my mentor, my tuning fork. In helping me learn how to live authentically, with grace, prosopagnosia has been my greatest teacher. I want to live in the world, fully, connected to people meaningfully. And this disorder, while very difficult to manage on a daily basis, has brought meaning and depth into my life. It’s helped me find great possibility for growth and deeper human connections.

And for these gifts I’m very grateful.

Heather Sellers is the author of [You Don’t look Like Anyone I Know: a memoir of family, face blindness, and forgiveness](#). She’s a professor of English at Hope College in Holland, Michigan. Her website is www.heathersellers.com where you can find links to her interviews on face blindness with George Stephanopolis, Rachel Ray, NPR, and others.



Researcher Spotlight:



Dr. Garga Chatterjee

Garga trained as a physician and graduated in medicine and surgery from Medical College, University of Calcutta in 2005. He worked on cognitive and perceptual processes in developmental prosopagnosia with Ken Nakayama as his advisor and received his PhD from Harvard in 2011. At present, he is working with Jeremy Wilmer (Wellesley) on the heritability of different face recognition processes and will join Pawan Sinha's Lab at MIT in the Fall. Garga is into sustainable development, human rights work, documentaries and music.



Dr. Lucia Garrido

Lucia holds a degree in Psychology from University of Porto in Portugal and a PhD from University College London. Lucia's PhD supervisor was Brad Duchaine and she is currently a postdoctoral researcher at Harvard University with Ken Nakayama. Lucia's work has focused on the neural correlates of developmental prosopagnosia. Lucia likes cinema, reading, and swimming in the ocean.



Dr. Joe DeGutis

Joe received his BA from Wake Forest University in Winston-Salem, North Carolina and PhD in Cognitive Neuroscience from the University of California, Berkeley under the direction of Mark D'Esposito, MD. He currently works with Ken Nakayama and Sarah Cohan trying to improve face processing in prosopagnosics through various types of cognitive training. Joe has always been fascinated by how practicing seemingly simple skills over an extended period of time can improve behavior and alter brain functioning.