

# **A discussion about Theory of Mind: From an Autistic Perspective**

**from Autism Europe's Congress 2000**

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## **Theory of Mind**

Ladies and Gentlemen,

this presentation is the result of a discussion on Theory of Mind ( *ToM* ) we had on an electronic mailing list, the ANI-list. To understand the character of this discussion, it is important to know a bit about mailing lists in general and specifically about the ANI-list.

A mailing list allows you to have group discussions via e-mail. Everything you send to the list address gets automatically sent to every member of the list, and of course you also get everything written by other list-members yourself. Often a discussion starts between two people, but after a while others step in and keep the discussion going.

The ANI-list, the mailing list of Autism Network International, is a list mainly for autistic people or "cousins," i.e. people with autism-related conditions, although the list is also open to other people. It's a private list, which means that membership must be approved by one of the list-owners, and it's not allowed to share posts from the list with people who are not list-members without permission of the author. In our presentation, we will only quote posts from people who have agreed to this, and we will use either their full name or just the first name or a nick name according to their wishes. The quotes are unaltered, but we made some changes in the sequence and added some parts. The authors who contributed to this discussion are Jared Blackburn, Niki L, Katja Gottschewski, Elsa George, Jane Meyerding, Jean Miller, Patricia Clark, and Hal.

On the ANI-list and also in this discussion, some terms are used which need explanation. One of those is the gender neutral pronoun, "xe," "xyr" or "xem," which was originally used to refer to an intersexed person, but is also used to refer to a person of any gender. People also often refer to "ACs" and "NTs." "AC" stands for "autistic or cousin," meaning a person on the autistic spectrum in a wide sense. "NT" stands for "neurotypical," i.e. a person with typical neurology, or a "normal" person. All people involved in this discussion on *ToM* are ACs.

Elsa George started the discussion raising some questions about the term "Theory of Mind," and how the word "mind" is used in this context:

I have just picked up a book by Uta Frith and have come across something called "theory of mind."

Does anyone know what she is talking about? It seems Uta Frith is implying there is some mysterious, non physical "mind" in each of us, separate from the brain. I have read some philosophical neuroscience books on the "mind," where I have gathered they

mean self-consciousness. The general direction this field is going is towards the mind being a direct result of the brain (something to do with communication between right and left hemispheres).

However I don't think this is what she means as she uses it to explain things like not being able to understand deceit. Which sounds more to me like a combination of logical reasoning and empathy (in which case I would say my theory of mind is intact). However, I also get the feeling I may have totally missed the point (not meaning I don't have one, I just failed to understand her distinction between mind and brain).

Jared then talked about the meaning of the term "Theory of Mind," as it is used by Uta Frith and others, and pointed out that it is in fact a rather vague term and used inconsistently:

To me, mind is pattern - like the attractors of chaos theory - it is a pattern of biological states and actions (with their associated subjective experience). I don't think that Uta is really talking about what "mind" is though, but only with the intuitive understanding that it (i.e., something like "that") exists. She is not really talking about mind itself, but the intuitive (and automatic) assumption that one exists in people. By this, she basically seems to be talking about the realizing that others (and ourselves) have their own thoughts, feeling, perception, beliefs, and so forth - as opposed to thinking one's own "mental" experience was identical to objective reality, and separate part of the world itself. Thus, she would say that someone without *ToM* would think that a person who knows the rock is under shell x, would not realize they *knew* it was "there," only that it *was* there, and assume everyone should act according to it being "there." A person with *ToM*, on the other hand, would realize that not everyone would know it was there, because the knowing was part of xyr own experience, not available to everyone - i.e., it was in their "mind," not just "so." I don't think that whether a mind is biological action, a ghost, or whatever is

really relevant to the "Theory of Mind" or Uta's hypothesis about the "Theory of Mind." (Note: "Theory of Mind" is not itself a scientific theory, it's a construct, like gravity, a name for an abstract concept - I'm not sure if Uta has bothered to name her theory *about ToM* - Uta is not suggesting *ToM* itself as a theory, but is assuming every NT adult has this idea anyway - she is proposing a theory about *ToM* not working in ACs.) In my opinion, "ghosts" have no place in science, it's not scientists job to argue against them - that's religion. But, I don't think Uta is talking about "ghosts."

Researchers have a lot of inconsistency in their use of the term "Theory of Mind" - *Simon Baron-Cohen and John Swettenham (1997) [1]* and Uta Frith seem to define it as above when explaining it, but their research often seems to be on totally unrelated (or only vaguely related) concepts. Thus it is misleading - they prove one thing or another called "Theory of Mind" is missing, and then report their results in terms of a totally different idea. And since they use terms like "theory of mind" and "mind blind" (that are catchy in media) they get a lot of unwarranted attention - and a lot of misleading ideas about autism get propagated. Uta's stimuli test all sort of things (one set was just an emotional expression reading test). She seems to have habits of changing definitions, making huge (il)logical jumps, and often has subtle circular reasoning. So, in a way, it's hard to really be sure what she's talking about, since she really isn't that consistent.

While the term "Theory of Mind" is already vague, there are still more problems with some tests which are supposed to test "Theory of Mind," as Jared pointed out:

Others have noted that, besides often testing a totally different construct, many "Theory of Mind" tests used by researchers depend on verbal ability, attention, information processing, and other capabilities that may be impaired in the subjects.

In the following, we discuss one specific *ToM* test, the Sally-Anne-test. In this test, the child gets to see two dolls, Sally and Anne. Sally puts a marble into a basket and then leaves the room. Anne enters the room, takes the marble out of the basket and puts it into a box. The child then gets asked where Sally would look for the marble when she comes back to the room. It is seen as a sign of *ToM* if the child understands that Sally doesn't know what Anne knows, and therefore answers that Sally will look in the basket where she put the marble herself. Niki L commented on this:

I believe that I had some sort of theory of mind problem myself when I was younger, but the problems I had were something that Sally Anne test cannot show. What you can detect by Sally Anne test is lack of "theory of others' knowledge," not lack of "theory of mind" in general. I had theory of others' knowledge when I was very young, possibly I might even have attained it earlier than many NT kids. However, my theory of others' knowledge had an awry exception, and I completely lacked "theory of people's (including my own) will and decision making." It seems to me that theory of mind is too broad an idea to describe the problem I had, because the term "mind" includes several different concepts.

If there were some other test about people's decision making, I would not have been able to pass until I reached preadolescence, but it was not because of ignorance, but because of over-adherence to "false theory of others' decision making," something similar to determinism, which I had formed when I had been very young, reasoning by analogy of TV program timetables I saw on newspapers, train timetables, weekly lunch menu at nursery school, and so on. I assumed that everything is predetermined and that adults were taking care of us according to some sort of program, without their own decision making. That is why I stopped making requests to parents. That suggests that difficulty to drop the old theory (which may come from difficulty of shifting attention)

was one of the primary problems.

Though I lacked theory of others' decision making, I had theory of others' knowledge, but it was incomplete. I would have passed Sally and Anne test even when I was two years old, if only two puppets were made to be same in size. But if Sally were taller than Anne and looked like an adult, I would not have been able to answer correctly until thirdgrader.

I lived in a black and white world, and I thought "any adult knows anything better than any kid." That is why I did not tell lies to my parents, not because I could not deceive, but because I thought it were useless anyway. I thought adults know everything like god, though they cannot change anything what they know (just as they cannot have reruns of the TV shows they missed at their will). I believed that kids become adult on their 20th birthdays, so everyone gets very smart and tough overnight. I dropped this 20th birthday theory one day, when I was 8 years old, not through observation of people but again, by analogy. I had to give up the idea that spring starts on March the 1<sup>st</sup>, summer on June the 1<sup>st</sup>, and so on after I recorded temperature every day for my earth science assignment.

Elsa replied to this:

I got quite a nasty shock when I started school and discovered my mother and teachers had different opinions. However, I generalised this in a slightly different way to you; I came to the conclusion that my mother was smart and that all teachers were stupid... This idea stuck for a *very* long time (and smart kids were definitely smarter than stupid teachers).

Katja reflected on the idea of a test like the Sally-Anne-test, but with one doll looking like an adult, and wondered about what result such a test would give:

I don't think anyone ever did such a test, but I wouldn't be surprised if NT children would also be more likely to give an incorrect answer (or would do so at an age where they are already able to solve the usual Sally Anne test with two child dolls). It's normal that children believe that adults, or their parents, are more or less godlike. Of course, adults have many abilities the children don't have, and some of them must just seem like magic. And if you see that someone has some abilities which are totally inexplicable and like magic to you, it can easily look like xe would be able to do and know everything. For autistic children, there are even more things which seem totally inexplicable. If you can't read faces, and don't even know about the importance of facial expression (and other body expression as well), or that it has any meaning, it looks like mind-reading if someone knows things about someone else which were expressed by that means. And if someone seems to be able to mind-read in some cases, why should xe not be able to mind-read in the Sally-Anne scenario?

However, even if the result - a belief that adults know everything, or almost everything - may be the same, Niki L sees a difference between the thoughts leading to this belief:

It was not like magical thinking that I hear NT children form, it was quite logical and all the more difficult to throw away because of it's logicalness. I derived the wrong theory from the fact adults say something like "you will like it," "you are going to have fun," "it won't hurt," and so on. Here, the primary problems were semantic-pragmatic problem and lack of intuition (or too narrow focus of attention).

I had been trapped in pseudo-magical-thinking. The end product happened to be similar to magical thinking NT children form, but it was formed not because of lack of objectivity but because of lack of information and over-adherence to logical calculation. It seems to me that my lack of information came from narrow focus of

attention and lack of intuition, and that my over-adherence to logic came from slow attention shift and again, lack of intuition. For an AC child who misses a lot of information including social cues, what seems to be magical thinking to NT professionals or parents reflects the reality.

Katja commented:

You may be right. I thought of magical thinking as a result of some sort of logic, too - if someone is able to do *one* thing I can't explain, that person might be able to do other things I can't explain as well. But I am not sure if this really is the explanation for magical thinking in NT children. It seems to me that I always applied logic to a much bigger extent than most people around me.

There is one thing which strikes me about the Sally-Anne-test. On first view, it may seem very obvious which answer would be "right," and in a way, not to know that Sally would not be able to know about the marble may show a lack of *ToM*. But in a way, it may even show the opposite: It could show that you were able to see that if **you** wouldn't be able to know something in a given situation, it doesn't mean someone else wouldn't, and that other people might have a perception different from yours. To interpret what it means if a child answers incorrectly, we have to know *why* it answered that way. Also, there might be several ways how to reach the "right" conclusion, and not all of them would show anything like *ToM*. The other problem with the "right" answer is that even if it's most likely that Sally will look for the marble in the basket, I can think of several possibilities why she wouldn't, for example bad memory, or that she has made the experience before that Anne took the marble out and put it into the box. So, the best possible answer to the Sally-Anne-test would be "Its very likely that Sally will look for the marble in the basket, but it's not impossible that she will look in the box, or maybe in some other place, or she may not look for the marble at all."

The same goes for tests which are about reading faces (and may be proposed as *ToM* -tests, although I don't see why not being able to read faces would necessarily show a lack of *ToM* ). Without knowing anything about the individual expression of a person, I claim that it is impossible to say with certainty which expression the person displays, but that's exactly what you are expected to do. To know what expression is *most likely* displayed is helpful (and I would like to have this knowledge more often than I do). But to believe that this definitely is the right answer is misleading and dangerous.

We will now go back from *ToM* -tests to the concept of *ToM* in general. Jared has formed his own "theory of Theory of Mind":

I have something of a theory on the "Theory of Mind" hypothesis. My view also impacts (and grew out of a reaction to) psychodynamic theory. I have long suspected that what is called "projection" is not a defense mechanism, nor is it so much a (subconsciously) active process, but is really a mild form of egocentricity. Basically, I assumed that people lazily and habitually assumed others thought the way they did. (Some cases may be intentional rationalization for self-defense, but for the most part I think it is a passive, unintentional assumption made to understand others.)

More recently, I was able to clarify this view by considering it in terms of cognitive theory, and found it to be a model of why Autistic people often seem to lack "Theory of Mind" to normal people (while normal people seem to lack "Theory of Mind" to some Autistic people). I think that "projection" is a type of social heuristic (a "rule of thumb" used to solve a problem quickly at the expense of accuracy). More to the point, I believe that "projection" is basically a social form of the "availability heuristic," an assumption that what is readily available to the mind is typical - in

practice this means that whatever is typical of one's own experience is considered typical in general, and can be assumed true as default (unless known otherwise). Since people have more experience with their own behavior, much more knowledge of their own thoughts and feelings, and direct knowledge *only* of their own thoughts and feelings, this is what is available to them. Thus, they use this assumption to guess motives and predict action of others. The results may not always be right, but it works enough (with perhaps some moderation some of the time) to be useful.

I believe that for people who are relatively typical - particularly normal people in their own culture - it works enough of the time to be very efficient, and this makes it rewarding, thus reinforcing the use of this heuristic - thus, this kind of thinking becomes pervasive and automatic. It may not work (or may even backfire) occasionally, but is mostly adaptive.

Since Autistic people are less likely to see things as connected, we may be less likely to make this assumption. Further, since our sensory experience and thinking may be different, and we may lack many socially learned assumptions, we may not be a good "model" for the behavior of most people around us. As a result, this heuristic may not give accurate or useful results for us - thus, this type of thinking is neither adaptive nor reinforced for most Autistic people - so even if an Autistic person does try this approach, it is not likely to be repeated much. Those Autistic people who are very intelligent may learn to model other people in a more analytical way, however, as part of adapting to society. For those who are skilled in this, it may become very accurate, and make a few Autistic people seem to have exceptional insight into people. However, even for them there is a social disability, because this accuracy is at a great cost in terms of speed and efficiency, and is maybe virtually useless in practical situations (which involve "real-time" interaction and fast interpretation and response). Thus, given time I may be able to analyze someone in various ways, and

seem to get good results, but may not pick-up on certain aspects of an interaction until I am obsessing over it hours or days later. So in practical situations, I have impaired social cognition, with problematic results, while I may seem to have good insights into people at other times.

Several people commented on the time aspect. Hal said:

I think I can relate to this experience. I develop great insights into people over time, but in the moment, well, "I don't think well on my feet" is an expression that comes to mind that I know applies to me. It seems impossible to try to focus on my own thoughts or feelings and consider different thoughts or feelings in another person or persons at the same time, especially if I am talking or actively listening to the other person talk. It takes time to process all the various components of a social interaction. I believe I spend huge amounts of time doing this, a lot of the time I spend alone goes into this.

Jean Miller experiences the same:

I also have a hard time applying what I know about people (from doing my 'homework') in any real time situation with them. I sort of start from scratch with people all the time. I really study people - after the fact - and I do spend a lot of alone time doing that.

Jane Meyerding went deeper into this subject. She sees a qualitative difference in those two kinds of processing, slow and quick:

Speed is a good analogy here, I think. People often impress me as a speed, a frequency. As Hal says, it takes time. NT people (some of them, anyway) are busy absorbing all the ripples on the surface of a person and making a judgment on that basis. Meanwhile, I see the ripples as blinding or irritating flashes in my eyes (so I close my eyes, if I can get away with it), but/and some other part of me,

some sense, is becoming aware of the frequency at which the core of the person is vibrating. Some people resonate well with me. They tend to be the slower (in frequency) bear-like people. Others have a frequency that, as my sister would say, makes my teeth itch. They tend to be the flashier, more impressive (to NTs) people.

My slow way of apprehending people can be (or seem) quite "penetrating" when NTs become aware of it. (I don't like that way of describing it. Seems to me more a case of resonance than of penetration.) They don't realize anything is happening in/with me because I am not reacting (positively) to all those ripples and they assume I am not sensitive to other people. Well, I am. But I am *slowly* sensitive.

Jean Miller added:

Me too, Jane. And it strikes me I'm absorbing and considering a great assortment of things about them. That's why I say I have antisopagnosia[ 2]! I know people's faces down to the acne scars on the left corners of their chins and what their eyes do when they speak, and how the hairs of their eyebrows curl, and how their hairlines curve around the tops of their foreheads.

I sometimes think this kind of 'thick description' would alarm people. Would feel intrusive to them. (Keep your eyes off my friggin acne scars!) And would seem obsessive. In a way it is obsessive, hyperfocused, but I have to do it or be hypofocused. When someone is important to understand and I have the opportunity to accumulate 'data,' I have a field guide to them. Without this, I find people bewildering. The best I can do is start picking up bits of data during my encounter with them because there's not much else I can do. It's pretty tiring, though, and explains something of why social situations are so draining for me.

That said, I'm not sure what kind of information about them I'm attempting to process. Maybe it's a search for an underlying principle by which to understand them. It's definitely not an attempt to interpret others' behavior, but to interpret *them*. Why would this particular person see things this way? Maybe it's yet another area in which I'm scurrying, busily trying to figure out *underlying principles* to make any kind of sense out of anything at all. People, as information, seem way more perplexing than any other 'reality.'

Elsa also describes how she studies and analyzes people and their actions all the time, and her problems to interact with people in real time:

I too study people, almost to the point of obsession. I find some people's actions / motivations etc. extremely intriguing. Some people puzzle me. Often after I've had a conversation with someone I cannot sleep at night because I am analyzing the conversation. I rerun the whole thing, look at what went wrong and what didn't, work out what might have actually been meant by that, think about more accurate answers, etc. I also plan conversations ahead of time if I know I am going to have to talk to someone. In fact, conversations / social interactions all seem like a strategy game to me. You have to plan your moves in advance, work out all the possible ways the opponent might respond, and try and work out different courses of action for each of these. The only problem is, often in real time and life, the other person makes a move you haven't accounted for, resulting in the end of any conversation. Thus, while I spend vast amounts of time analyzing social situations, the practical side of things is still highly stressful and very hard to do successfully.

Also, people often comment on how unpredictable my reactions are. Often I either over- or underreact because I didn't realize the context of an event (I think this might have something to do with

what Jared was saying about not seeing things as connected).

In addition, she has a problem she shares with many of us, a difficulty to recognize faces:

People's faces are another problem altogether. Unless I know someone very well, I find it very hard to identify people. I forget names too. If I want to remember people, I have to pick a certain characteristic and memorize it. E.g. this person has a mole on their forehead and their name rhymes with 'street'. One trivial result of this is that I cannot follow movies on TV. More drastically I still can't always recognize or sometimes confuse the teachers at school, even though I've been there for 5 years. (There are 2 teachers in the science department who have short brown hair, glasses, and always wear long socks. I never use their names because I don't have a clue which one is which!). I guess this is not a very socially acceptable way of recognizing people!

She then wrote about having insight into people, and that she doesn't always think it's a very favorable thing:

I have had this happen all too often. I think it is because I tend to remain totally objective and unmoved by many NTs' problems. I also tend to listen more than talk, and anything I say is rather straight forward and blunt. Because of my objectivity and lack of personal interest, NT's often feel unthreatened by me and tend to confide in me. Then they assume they are closer to me than they really are... it all gets very annoying!!!

Katja could partly relate to this experience, although she sees it less negative:

I have often been the objective listener in whom people liked to confide, too. I don't mind to have this role, and by hearing people tell about problems which were often very foreign to me, I also

learned a lot about people in general. I believe that a lack or deficit in automatic processing of "people information" is actually an advantage to have this role, because it means that I don't judge or form an own opinion quickly (often not at all). I also don't mix emotions and logical reasoning, as many people do.

Jared reflected on different ways of thinking:

I think my view of other people was/is unusually flexible because I lack a specific "people" way of thinking (separate from objects), so I do not "see" myself in others. Instead, it is all processing abstract concepts and systems - much like computer programs or physical forces. However, I have been quite aware for a long time that others had (different) knowledge and motives.

This is a bit different for Patricia Clark, who said:

At this point, all I can add is that perhaps I was not so aware that others had different knowledge and motives. I was more aware that I have *no idea* what their knowledge and motives were, in most cases. So I was living in a world of chaos, not your world of realization that they were operated by other knowledge and motives than I had!

Seems like a small distinction, but my chaotic surroundings have affected my ability to function.

Jared answered:

I sometimes think that not all autism is really the same thing - just similar. So maybe it's different for different people.

Niki L agreed to this, and added:

Moreover, I suspect that " *ToM* problems" are not primary

problem, just several patterns of manifestation of secondary problem.

Maybe "lack of intuition" would be more basic, primary factor than *ToM* itself. Many ACs lack some sort of intuition and have a hard time guessing hidden rules many NT kids somehow see, and if the AC person has enough "reality-check" ability and enough interest in the outside world to find something looks strange, he tries to fill the gap with knowledge and logic instead of intuition. Of course the nature of knowledge or logic depends on xyr experience, reasoning ability, environment, object of current perseveration and fixation, and so on.

The combination of these factors leads to many kinds of *ToM* problems, including just delay of attaining one, or formation of partial *ToM* (like myself before age ten or so), or maybe slightly funny *ToM* , or total lack of any. Of course, with certain combinations, many ACs will form perfect *ToM* , but maybe just fail to apply it to everyday situation as intuitively and automatically as many NT people do, because of problem in intuition, and have to think every time.

I think I eventually formed a relatively good theory of mind, but it took intentional effort. And I still have to apply it manually. It gets faster and faster as I collect many patterns in my memory, but I'm afraid it won't be automatic forever.

I am not sure if I should have written "I'm afraid" now, because having to apply it intentionally has it's good side, too.

Katja replied:

Yes, I absolutely agree. Automatic and instant processing of facial expression is something which often works really well, and something I sometimes miss, but it can also get into the way. NT

people have often misinterpreted my facial expression and assumed that I was unhappy when I was perfectly happy, or that I was unconcentrated when I was concentrated, or that I didn't have feelings at all, etc. This can be quite annoying. It seems that this is hard to control for many NTs because it happens automatically and often unconsciously. It's certainly important for autistic people to learn something about facial expression and body language. But it's also *very* important for NTs, especially those who have some connection with autistic people or other people with unusual expression, to learn to be more conscious about their automatic processing, and to learn that some people express themselves differently.

We are getting towards the end of our presentation. As you may remember, it started with a question about Theory of Mind asked by Elsa George. We have discussed many aspects of this, but she is still, or even more so, wondering about one thing:

The way I understand Theory of Mind now, Lack of *ToM* = a belief that everybody shares your knowledge of things / everybody thinks the same way you do / experiences everything the same way you do.

If this is so what makes anyone think that it's AC's who lack theory of mind? Uta also says that AC's don't understand social rules and appear not to have any knowledge of them. In this case problems are caused by the fact that NT's assume such knowledge is universal (= *LoToM*). Personally I have little doubt that I think differently to most others. This has caused problems at school sometimes when teachers have automatically assumed I'm wrong without bothering to understand what I did (= *LoToM*). Of course, there are exceptional teachers who take the time and effort and like it when someone has a different approach, but they are few and far between. Finally, I wonder how many of us have been 'accused' of being oversensitive. How true! But this does not mean our

experience was deluded or wasn't really experienced this way. People can be very nasty in their belief that it does (= LoToM).

Jared tried to give an explanation why both ACs and NTs may see a lack of *ToM* in the respective other group:

Because Autistic people see most normal people as seeming to assume everyone is like themselves, and would react as they would in the same situation, normal people may often seem to lack "Theory of Mind" (" *ToM* -less NTs") to many high functioning Autistic people. On the other hand, normal researchers are tempted to assume lack of or deficiency in "Theory of Mind" when Autistic people don't automatically jump to these conclusions.

Elsa replied:

This makes sense! It is logical that people who think differently will have trouble understanding other peoples thoughts / actions / interactions. Its seems to me that this is a matter about whether *ToM* is valid in a particular situation or not, not about whether or not someone has it. In which case *ToM* works between NT's, and it works between AC's but it fails when AC's and NT's interact together.

I often do have a lot of difficulty understanding people's actions / decisions etc. but I do not think this is because of a LoToM. It is just that I don't personally see the worth or value of their reasons. E.g. I know that people think I look strange because my clothes are home made and unfashionable, however I fail to see what, in itself, makes unfashionable clothes look strange... except for the fact that nobody else wears them. Which suggests that things are strange if they don't conform to what the majority does, but again I can't draw any connection between the two. It all seems to boil down to different value judgements.

With this, we want to finish this presentation. We hope that everyone got something out of it, and that it leads to further discussion. Thank you for listening.

## Notes & References

[1] Jared refers to a specific text where he had read about some ToM related theories and research this was:

Baron-Cohen, Simon, and John Swettenham. (1997). "Theory of Mind in Autism: Its Relationship to Executive Function and Central Coherence." In Donald J. Cohen and Fred R. Volkmar, eds., *Handbook of Autism and Pervasive Developmental Disorders* 2<sup>nd</sup> Ed. (pp. 880-893). New York: John Wiley & Sons, Inc.

[2] Antisopagnosia: Jean is playing on the word "prosopagnosia," which means the inability to recognize faces. Antisopagnosia is meant to imply a sort of opposite or partial opposite, specifically heightened awareness of the details of people's faces.