

# The Neurophysiological Cause of Autism

David Rowland

Independent Researcher and Member of the Canadian Association for Neuroscience

## Corresponding Author\*

David Rowland  
Canadian Association for Neuroscience, Independent Researcher,  
Canada  
Tel: 5193414684  
Email: david222@hush.com

**Copyright:** 2020 David Rowland. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Received** 08 July 2020; **Accepted** 28 July 2020; **Published** 06 August 2020

## Abstract

The current overly broad definition of autism has launched an epidemic of false diagnoses that include conditions of uncertain similarities. Professionals diagnose by ticking off symptoms on a subjective checklist that has no clear relation to causality. This study firmly establishes that autism has a singular neurophysiological cause that is responsible for all 52 of its documented traits, redefines autism in terms of this unique cause, and provides an objective litmus test whereby you can know for certain if someone suspected of being autistic has been correctly diagnosed.

**Keywords:** Autism • Neuropsychology • Neurophysiology

## Introduction

Autism, from the Greek word meaning self, was coined in 1911 by Swiss psychiatrist, Eugen Bleuler, who used it to describe withdrawal into one's inner world [1]. Autistic children appear to be in a world of their own, isolated and alone, with senses that can overload easily. These children talk endlessly about one subject, engage in repetitive behaviors (e.g., wringing hands, rocking body), continually repeat certain words or phrases, and are resistant to change [2].

In 1943, psychiatrist Leo Kanner studied the case histories of 11 highly intelligent children who shared a common set of symptoms consistent with autism: the need for solitude, the need for sameness, to be alone in a world that never varied [3]. Kanner assumed that these children came into the world without innate biologically provided ways of emotionally connecting with other people [4].

In 1944, medical professor Hans Asperger described "a particularly interesting and highly recognizable type of child" who has an autistic personality that is an "extreme variant of male intelligence" [5]. Asperger described four boys who had severe difficulties of social integration that were compensated for by the kind of high level of thought and experience that can lead to exceptional achievements in later life. He chose the label autism for this condition as referring to an inherent fundamental disturbance of contact, the shutting off of relations between self and the outside world [6]. Asperger remarked that for these boys, social adaptation has to proceed via the intellect; and in fact, they have to learn everything via the intellect. He considered the autistic syndrome to be a stable personality trait that is genetically transmitted in families [7].

In 1962, psychiatrist Gerhard Bosch compared infantile autism to the Asperger autistic syndrome and considered them to be two variants of the same condition [8]. In my family, one young lad has classic autism disorder and his younger brother has Asperger syndrome, thus confirming that both variations are indeed the same genetic condition.

In 1979, psychiatrist Lorna Wing introduced the term Asperger syndrome to describe the abnormal autistic personality. Wing personally examined 34 cases fitting Asperger's description of the autism syndrome and found that they had the following 11 traits in common:

- Single-mindedness combined with social isolation;
- Pedantic speech, often consisting of lengthy discourses on favorite

subjects;

- Poor comprehension of other people's expressions and gestures;
- Tendency to misinterpret or ignore non-verbal signs;
- Impairment of two-way social interaction;
- Inability to understand rules of social behavior;
- Lacking the intuitive ability to adapt their approaches to fit in with the needs of others;
- Intensely attached to certain possessions;
- Excellent rote memories and intensely interested in one or two subjects;
- Absorb every available fact concerning their chosen field and talk about it at length, regardless if the listener is interested; and
- Thought processes are confined to a pedantic, literal, and logical chain of reasoning.

In 2020, author David Rowland discovered that autism is caused by an inherent neurophysiological anomaly which creates a perpetual state of hyperfocus: intense mental concentration fixated on one thought pattern at a time to the exclusion of everything else, including one's own feelings [9, 10]. Hyperfocus is the sole factor responsible for the autistic person's withdrawal into an inner world that is entirely mental. Hyperfocus keeps a person's awareness trapped in the intellectual/analytical left frontal lobe with no ability to access whatever may be happening in the right frontal lobe, where emotions and social connectivity are felt. Autistic hyperfocus explains all 11 traits of Asperger syndrome as listed by Lorna Wing above.

The most fitting description for autism is the word given to it in the Maori language: "takiwātanga". It means "in his/her own space".

## Epidemic of False Diagnoses

A 10-year Swedish study in 2015 concluded that although the prevalence of the autism phenotype has remained stable, clinically diagnosed autism spectrum disorder has increased substantially [11]. Phenotyping is a reliable way of assessing autistic neurophysiology because it is based on observing gene expression in individuals and relating their conditions to hereditary factors. The reason autism diagnoses have increased substantially is because phenotyping has been abandoned in favor of ticking off symptoms on a subjective checklist, with little to no understanding of the possible causes of said symptoms.

A 2015 national survey in the U.S. reveals that many children originally diagnosed with autism spectrum disorder are later found not to be autistic [12]. Misdiagnosed children are less likely to have been referred to and diagnosed by a specialist – and also less likely to have ever received a diagnosis of autism disorder or Asperger syndrome.

A 2015 report in Psychology Today claims that many children who have been diagnosed with autism turn out instead to have a combination of language delay, sensory issues, and apraxia [13]. Apraxia indicates that a child (a) has cognitive understanding of language but is unable to express it verbally, and (b) cannot blend sounds in words to create intelligible communication. Some of these children are inattentive and cannot focus on being tested. Others have processing issues and cannot respond in enough time to be evaluated at all.

A 2016 study in Germany indicated that the prevalence of autism spectrum disorder diagnoses had increased by over 70 percent between the years 2006 and 2012. The researchers strongly suggest that such dramatic increase was due to a significant portion of misdiagnoses [14]. It is believed that many of the children in question may simply have had a low IQ, learning difficulties, or ADHD rather than autism [15].

A comprehensive 2019 study in JAMA Psychiatry indicates that autism is being significantly overdiagnosed [16]. The autism category has been considerably overextended. Most neurogenetic and child psychiatry disorders that have only a loose resemblance with autism are now labeled autistic. Doctors often label as autistic anyone who simply has ADHD and poor socialization.

A 2019 report in the Irish Times suggests that many children are being misdiagnosed with autism spectrum disorder (ASD) when they have instead

sensory processing disorder (SPD) [17]. Children are being diagnosed as autistic simply because of poor eye contact, not liking hugs and kisses, having poor play, and having meltdowns. An article in the Telegraph on the same theme gave an example of an 18-month old child who had been given a diagnosis of autism when his behavior became withdrawn and aggressive. A year later it was discovered that this boy had been suffering from an autoimmune condition that affects behavior [18].

### Incentives for Misdiagnosing

In Germany's educational system, autistic children are entitled to extra help with their schooling and their parents have access to certain aid funds. There is social pressure from parents who say, "We'd like that diagnosis, and if we don't get it from you, we'll go somewhere else." However, most children with autism are capable of normal school and do not require special educational assistance.

In Ireland, a diagnosis of autism gives children greater access to special services and education services based on special needs than do diagnoses of other conditions. This benefit makes clinicians more likely to diagnose a child with autism rather than with some other disorder [19].

In the U.K., a Disability Living Allowance benefit is paid for children who need additional care or supervision because they are autistic. Neither an official diagnosis nor a means test is required for the parents to receive this benefit.

In the U.S., a diagnosis of autism enables parents to have Risperidone and Aripiprazole prescribed for their children. These antipsychotic drugs for schizophrenia, bipolar disorder, and depression cannot possibly provide any therapeutic benefit for autism. Parents medicate for the sole purpose of controlling their children's difficult behavior.

In the U.K., asocial children who resist schooling and suffer from anxiety can readily be misdiagnosed as being autistic. Such false autism diagnosis works to the advantage of the mother in child custody hearings [20].

### Misleading Criteria

Currently, the diagnosis of autism is based on behaviors shared with other diagnoses. The National Institute of Mental Health (NIMH) claims that autism spectrum disorder (ASD) is a developmental disorder that affects communication and behavior and is characterized by the following [21]:

- Difficulty with communication and interaction with people
- Restricted interests and repetitive behaviors
- Symptoms that impair ability to function properly in school, work, and other areas of life.

These criteria are so overly broad as to be meaningless. None of them applies exclusively to autism. Furthermore, autism is not a developmental disorder but rather an inherent brain anomaly.

The NIMH goes on to list 14 signs and symptoms of ASD, many of which are subjective. Examples:

- a. A child with poor social communication/interaction behaviors may be the product of bad parenting.
- b. A child having difficulty interacting with others may have a sensory processing disorder (SPD).
- c. A child who has repetitive behaviors and gets upset with slight changes in routine may have obsessive compulsive disorder (OCD).
- d. Having a lasting intense interest in certain topics also applies to neurotypical children who have high IQs.
- e. Making little or inconsistent eye contact applies only to some autistic children. Many make full eye contact during every conversation.

### Neurophysiology of the Autistic Brain

The neurological structure of the autistic brain is the same as for any other brain. What is different about the autistic brain is how it functions with respect to its neurophysiology. In a neurotypical brain, the cingulate gyrus (CG) acts like an automatic transmission that seamlessly switches attention back and forth between frontal lobes, as required.

In autism, however, a dysfunctional CG keeps the person trapped in his/her left frontal lobe, the intellectual, analytical, problem-solving part of the brain – with no ability to access the emotional/creative processing right frontal lobe, which plays a central role in spontaneity, social behavior, and nonverbal abilities. Some neurotypical people are left-brain dominant whereas others are right brain dominant. Autistic people, however, are left brain exclusive.

They always speak factually, with no trace of emotion, and a deadpan facial expression.

Being left brain exclusive means that one can only process his/her emotions intellectually, by deduction or inference, a process that can take about 24 hours. Failure to process emotions causes anxiety, which is an upsetting physiological response (different from emotion) that bypasses the intellect.

Dysfunction of the CG is the probable cause of hyperfocus, the perpetual state of intense single-minded concentration fixated on one thought pattern at a time, to the exclusion of everything else. Hyperfocus is so intensely single-minded that an autistic person cannot divide attention between two trains of thought. An autistic person takes everything you say literally because s/he cannot also be running a second mental program questioning how you use words. While talking at length about a favorite topic, autistic people are incapable of running a second mental program asking how they are being received or perceived by their audience. Autistic people require structured activities because they cannot divide their attention between what they are doing and trying to figure out what may be about to happen next.

Hyperfocus also causes various kinds of sensory overload. A sudden loud or high-pitched noise switches hyperfocus to the noise, which the autistic person then experiences with many times the intensity than does a neurotypical person. Seeing too many words on a page can cause cognitive impairment whereby the autistic person's mind goes disturbingly blank. Too many products on shelves and overhearing unwanted conversations in stores can trigger anxiety. Lighting displays in hardware stores can trigger intense anxiety. For some, hyperfocus exaggerates the sense of touch, making close fitting clothing irritating and hugs unbearable.

### Autistic Hyperfocus

Hyperfocus is the unique and defining characteristic of autism that is responsible for 52 of its observed traits listed below. Hyperfocus is the perpetual and unrelenting state of intense single-minded concentration fixated on one thought pattern at a time, to the exclusion of everything else.

Approximately one-third of the traits below can also have other causes. That is why the symptom survey approach to diagnosing fails. Without understanding causality, the categorizing of symptoms creates only confusion.

### A Litmus Test for Autism

Hyperfocus is the unique and defining causal state of autism that creates its observed characteristics. Hyperfocus prevents someone from dividing attention between two thought patterns or two stimuli at the same time. An autistic person talking to you is incapable of feeling any emotion in that moment. The surest way to find out if someone is autistic is to ask these five questions, to which you should receive the following responses.

Example of an intellectual answer: "No, I'm not angry. That wouldn't be logical."

Anyone who answers all five questions as above is autistic. Anyone who answers four or fewer as above is not autistic. Note: If the person answers the third question with a phobia (e.g., of heights), then re-ask the question this way, "Aside from this phobia, do you normally experience fear of any kind?"

### The Spectrum Fallacy

The autism spectrum idea is counterproductive and needs to be scrapped. This erroneous concept has been a major contributor to the epidemic of false diagnoses of autism.

Autism does not belong on any spectrum. There is only one kind of autism, not several. There are no shades of autism, nor any such thing as autistic tendencies. Autism is 100 percent. Either one is autistic, or s/he is not. There is no middle ground (Figure 1 and Tables 1-3).

The only variable within autism is the intensity with which hyperfocus is experienced. Low functioning autistic people (autism disorder) are so intensely locked into hyperfocus as to be unreachable. High functioning autistic people (Asperger syndrome) experience hyperfocus less intensely. If a visual model would be helpful, then it needs to be a vertical bar chart rising from greatest intensity (lowest functioning) at the bottom to least intensity (highest functioning) at the top.

Non-communicative autistic children are the ones most intensely trapped in hyperfocus, and there is no known way to bring them out of it. Intensely autistic children cannot be taught to speak; however, some spontaneously start to speak on their own initiative, as Einstein did at age four. The only non-communicative children who can be taught to speak are those who have developmental, learning, language, communication, or social disorders unrelated to autism.

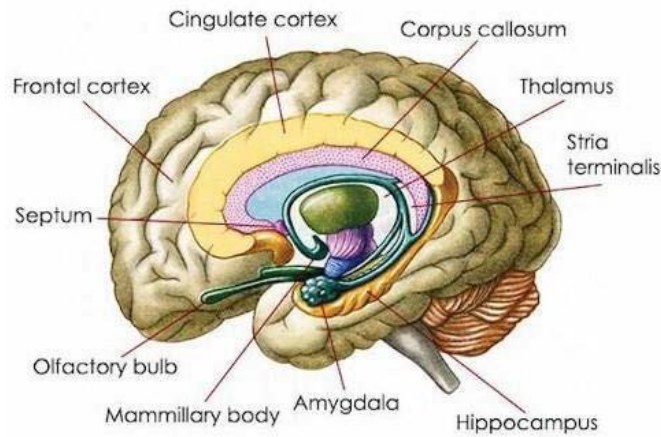


Figure 1. Neurophysiology of the Autistic Brain.

Table 1. Neurotypical brain Functions.

<b>Cingulate Cortex/ Gyrus</b>	Dysfunctional	The cingulate gyrus (CG) is that part of the brain which focuses attention. In autism, the CG appears to keep the person's attention trapped in the left frontal lobe, creating a perpetual state of hyperfocus.
<b>Left Frontal Cortex/ Lobe</b>	Dysregulated	In the autistic left frontal lobe, alpha frequencies (8-12 Hz) predominate over beta (12.5-30 Hz), which is the exact opposite of the neurotypical brain. Higher alpha frequencies in the left brain appear to be compensating for the inability to access creativity and intuition from the right brain.
<b>Right Frontal Cortex/ Lobe</b>	Inaccessible	There is normal brainwave activity in the right frontal lobe, with alpha frequencies predominating over beta frequencies. However, the autistic person is completely unaware of anything that happens in his/her right frontal lobe, the place where emotions and social connectivity are experienced.
<b>Amygdala</b>	Inactive	The amygdala plays a central role in the expressing of emotions, especially fear. A dysfunctional CG prevents the autistic person from feeling any emotion, with the result that the amygdala is virtually non-functioning. An autistic person typically never experiences fear.

Table 2. Autistic Hyperfocus Symptoms.

<b>Mental Traits</b>	<ul style="list-style-type: none"> <li>• Intense single-mindedness</li> <li>• Trapped in thoughts</li> <li>• Mind always busy, tendency to overthink</li> <li>• Passionately pursues interests, often to extremes</li> <li>• Amasses encyclopedic knowledge about areas of interest</li> <li>• No interest in fiction</li> <li>• Self-awareness but no social awareness</li> <li>• Interruptions trigger agitation, confusion, or anxiety</li> <li>• Cannot multitask</li> </ul>
<b>Sensory Overload</b>	<ul style="list-style-type: none"> <li>• Hypersensitive to noise and other sensory stimuli</li> <li>• Experiences anxiety from being mentally trapped in a sensory assault</li> <li>• Overwhelmed from hearing unwanted conversations</li> <li>• Overwhelmed by too much information</li> <li>• Coping with electronics and filling out forms may cause anxiety</li> <li>• Sensory overload makes it impossible to think or focus</li> <li>• Difficulty listening to radio or talking with others while driving</li> </ul>
<b>Emotional Traits</b>	<ul style="list-style-type: none"> <li>• Unable to feel emotion</li> <li>• Has physiological responses instead of emotions</li> <li>• Processes emotions intellectually</li> <li>• Anxiety bypasses the intellect to warn of unprocessed emotions</li> <li>• Incapable of experiencing fear</li> <li>• Can be angry without knowing so</li> <li>• Never (or rarely) cries or laughs</li> <li>• Cannot nurture self psychologically</li> <li>• Shrinks from emotional displays by others</li> <li>• Unable to defend against emotional attacks</li> </ul>
<b>Social Traits</b>	<ul style="list-style-type: none"> <li>• Considers self to be an outsider</li> <li>• Lacks innate motivation to socialize</li> <li>• Unaware of feelings, needs, and interests of others</li> <li>• No awareness of how perceived by others</li> <li>• Unaware of socially appropriate responses</li> <li>• Misses subtleties, unable to take hints</li> <li>• Unable to read body language</li> <li>• No awareness of flirting</li> </ul>
<b>In Conversation</b>	<ul style="list-style-type: none"> <li>• Speaks factually with no trace of emotion</li> <li>• Takes everything literally</li> <li>• Easier to monologue than dialogue</li> <li>• Oblivious to motivations of others while they are speaking</li> <li>• Misses sarcasm</li> <li>• Misses social cues and nonverbal communication</li> <li>• Participating in 3-way conversations may be overwhelming</li> <li>• May have difficulty following topic changes</li> </ul>

In Relationships	<ul style="list-style-type: none"> <li>• Understands love intellectually but cannot feel love</li> <li>• May understand empathy but not be able to feel it</li> <li>• Cannot be emotionally available to others</li> <li>• Others cannot provide an emotional safety net</li> </ul>
Temperament	<ul style="list-style-type: none"> <li>• Drawn more strongly to certain things than to people</li> <li>• Innate forthrightness tends to scare others</li> <li>• Never bored, always engaged in some mental activity</li> <li>• Consistent to daily routines, agitated if routine is disrupted</li> <li>• Spontaneity not possible, activities must be pre-planned</li> <li>• Cannot lie spontaneously, can tell only premeditated lies</li> </ul>

**Table 3.** Litmus Test for Autism.

How often do you cry?	“never” or “rarely”
How often do you laugh?	“never” or “rarely”
What are you afraid of?	“nothing” or an intellectual answer
What are you feeling now?	“nothing” or an intellectual answer
Do you ever get bored?	“never”

### Conclusion

The symptom survey approach has been a major step backward in diagnosing autism, compared to the clinical phenotype diagnosing that was common during the 1960s. Phenotyping is based on observing gene expression in individuals and relating their conditions to hereditary factors.

Environment plays no part in the causality of autism, which is an inherent neurophysiological anomaly in how the brain processes information. A brain trapped in perpetual hyperfocus is incapable of responding to environmental or social pressures. Neither is it capable of responding to behavior modification therapy. No one can be talked out of autistic hyperfocus.

What the psychology professions now require is a causal based definition, for which I propose the following:

Autism is the perpetual and unrelenting state of hyperfocus, intense single-minded concentration fixated on one thought pattern at a time, to the exclusion of everything else, including one’s own feelings. Hyperfocus appears to be caused by a dysfunctional cingulate gyrus (CG), that part of the brain which focuses attention. The symptom survey approach has been a major step backward in diagnosing autism, compared to the clinical phenotype diagnosing that was common during the 1960s. Phenotyping is based on observing gene expression in individuals and relating their conditions to hereditary factors.

Environment plays no part in the causality of autism, which is an inherent neurophysiological anomaly in how the brain processes information. A brain trapped in perpetual hyperfocus is incapable of responding to environmental or social pressures. Neither is it capable of responding to behavior modification therapy. No one can be talked out of autistic hyperfocus.

What the psychology professions now require is a causal based definition, for which I propose the following:

Autism is the perpetual and unrelenting state of hyperfocus, intense single-minded concentration fixated on one thought pattern at a time, to the exclusion of everything else, including one’s own feelings. Hyperfocus appears to be caused by a dysfunctional cingulate gyrus (CG), that part of the brain which focuses attention.

### Conflict of Interest

The authors declare no conflict of interest.

### References

#### References

1. Blatt, G. “Autism”, Encyclopedia Britannica.
2. <https://www.goodreads.com/book/show/12284375-temple-grandin>
3. Kanner, L. Autistic disturbances of affective contact. *Acta Paedopsychiatr.* 35.4 (1968): 100-136
- 4.

<https://psycnet.apa.org/record/2013-17646-000>

5. Asperger, H. Die "Autistischen Psychopathen" im Kindesalter. *Arch Psychiatr Nervenkr.* 117.1 (1944): 132–135.
6. Asperger, H. Autistic psychopathy’ in childhood. *Autism and Asperger Syndrome*, edited by Uta Frith Cambridge: Cambridge University Press. (1991): 37-92
7. Wing, L. Asperger syndrome: a clinical account. *Psychol Med.* 11.2 (1981):115-129.
8. Bosch, G. *Infantile Autism.* Springer-Verlag. New York, 1970.
9. Rowland, D. Differential diagnosis of autism: a causal analysis. *J Neurol Neurophysiol* 11.2 (2020): 489.
10. Rowland, D. A need to redefine autism. *J Neurol Neurophysiol* 11.1 (2020): 001-004.
11. Lundstrom, S., et al. Autism phenotype versus registered diagnosis in Swedish children: prevalence trends over 10 years in general population samples. *Brit. Med. J* 15.2 (2015): 350.
12. Blumberg, S.J et al. Diagnosis lost: differences between children who had and who currently have an autism spectrum diagnosis. *Autism* 20.7 (2016): 783-795.
13. <https://www.psychologytoday.com/us/blog/listen-the-kids/201508/what-if-the-diagnosis-autism-is-wrong>
14. Bachman, C. Diagnoses of autism spectrum disorders in Germany: Time trends in administrative prevalence and diagnostic stability. *Autism* 22.3 (2018): 283-290
15. <https://www.dw.com/en/child-autism-diagnosis-in-vogue-in-germany/a-37306457>
16. Rodgaard, E.M, et al. Temporal changes in effect sizes of studies comparing individuals with and without autism: a meta-analysis. *JAMA Psychiatry* 76.11(2019): 1124–1132
17. <https://www.irishtimes.com/life-and-style/health-family/parenting/why-are-so-many-children-being-diagnosed-with-autism-spectrum-disorders-1.4055335>
18. <https://www.telegraph.co.uk/health-fitness/mind/terrified-little-boys-future-doctors-diagnosing-manychildren/>
19. <https://www.romper.com/p/how-many-children-are-misdiagnosed-with-autism-the-rates-continue-to-rise-17484>
20. Garber, B. Parental alienation and the dynamics of the enmeshed parent-child dyad: adultification, parentification, and infantilization. *Family Court Review* 49. 2 (2011): 322-335.
21. <https://www.altogetherautism.org.nz/a-time-and-space-for-takiwatanga/>