

Ray Peat's Newsletter

Nurture is an essential part of Nature.

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Autism and Causality

The incidence of diagnosed autism increased about 30 percent in a recent two year period in the United States, according to the Centers for Disease Control. In the last 75 years, there has been about a 50-fold increase. Although the meaning of the word has changed over time, increasing its diagnostic application, there is general agreement that certain types of symptom have become more common. It is just one of many health problems that are increasing, despite the apparent growth of knowledge in biology and medicine. Valid knowledge of its causes, leading to ways to prevent and cure it, is likely to be applicable to other conditions.

The only normal people are the ones you don't know very well.

Alfred Adler

Early in the 20th century, Eugen Bleuler used the term "autism" to refer to a withdrawn, uncommunicative type of schizophrenia: "The most severe schizophrenics, who have no more contact with the outside world, live in a world of their own This detachment from reality with the relative and absolute predominance of the inner life, we term autism." He clearly explained the idea of a spectrum of contact with reality, with even relatively normal people sometimes being more or less selective in the amount of reality they allowed into their awareness.

With rational objectivity at one extreme, and a pathologically uncommunicative introversion at the other extreme, Bleuler's approach was both empirical and analytical, and avoided rigid

categorization. However, in 1919 he published a book, *Autistic and undisciplined thinking in medicine, and how to overcome it*. For 20 years, that use of the word probably made doctors in western Europe less likely to use the term in diagnosing the problems of children, but in Moscow in 1925, a child psychiatrist, Grunya Sukhareva, published the first study of autistic children. Her article describing the "autistic (pathological avoidant) psychopathy" was published in German a year later.

In 1938, Leo Kanner in the US, and Hans Asperger in Vienna, began using the term to describe the children they were studying, and they published articles on their work in 1943 and 1944, respectively. Kanner had a list of 20 traits that were common in his group of 11 children. Although he sometimes referred to autism as "inborn," he described the condition that typically was noticed in the child's second or third year, and he believed that the emotional regression of the child was caused by the emotional coldness of the parents, especially the mother. He considered the condition to be very rare, occurring about once per 2500 children.

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Hans Asperger wasn't ambivalent about the hereditary nature of the conditions that he described. His attention was on older children, and his definition of autism was similar to Sukhareva's. He emphasized that the specialized abilities of some of his patients could be socially

useful if they were given appropriate schooling, but he believed that the majority were socially worthless, and he referred them to a “hospital” that specialized in euthanasia. There has been some embarrassment about his Nazi activities among diagnosticians, leading to the official disappearance of the “Asperger’s syndrome,” but some countries have declared his birthday to be International Asperger Day, and some of those in the autism culture are arguing that Asperger was the true “discoverer” of the syndrome, and that Kanner stole his ideas. Kanner, who helped to relocate 200 Jewish refugees to the US, was undoubtedly aware of Asperger’s involvement with the Nazi system, and as a result probably considered his work not to be scientifically valid.

Bruno Bettelheim, a proponent of Freud’s psychoanalytic doctrine, popularized Kanner’s “refrigerator mother” idea, and by the early 1950s stories in the major US news magazines had made the public aware of the idea that neglected babies sometimes developed emotional problems and odd behaviors such as repetitive movements and avoidance of touching.

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In 1964 Bernard Rimland wrote a book rejecting that “psychogenic” theory, arguing for a “biological” cause. Rimland had an autistic son, and he (following observations of Kanner and Asperger) suggested that “intellectually superior,” introverted, highly educated parents were more likely to have autistic children because of contributing a genetic vulnerability directly related to intelligence. He suggested that the reticular activating system in the brain stem was likely to be the part of the brain responsible for autism. Although it was generally believed that diseases caused by genetic defects were incurable, Rimland was aware of Abram Hoffer’s success in treating schizophrenia with niacin. Hoffer was following

Linus Pauling’s orthomolecular principle, in which a genetic malfunction could be corrected by providing increased amounts of the metabolite that was lacking as a result of a defective gene. Rimland organized studies, using B vitamins and magnesium, demonstrating improvement in the majority of the treated children, and cures in some.

The orthomolecular doctrine was inspired by Roger J. Williams’ demonstrations of the biochemical uniqueness of each rat or person, which suggested that each individual might require a slightly different environment to develop properly and to stay healthy. Williams’ research was in the interaction of nutrition with the individual’s genetic makeup. It was committed to genetic determinism, but it provided some loopholes, a scientific rationale for considering that “innate diseases” such as autism might be curable.

The doctrine of genetic determinism has historically had several functions; an important one has been to justify the inability of medicine to cure diseases such as cancer, diabetes, and schizophrenia, but it’s also an ideology, with strong political and “philosophical” implications, including eugenics. When Bernie Rimland said that autism had a genetic cause, and that it wasn’t the result of bad parenting, his book became extremely popular with the parents of autistic kids, and that popularity was reinforced by the medical determinists, and also by the eugenics advocates. When Rimland’s book was published, several states still had laws permitting forced sterilization of undesirable people. More than 50 years later, there are well known autism researchers who virulently attack workers in the field who defend the psychogenic view, or who don’t fully support the view that autism is inborn and determined by genes. Medical opinion was much less enthusiastic about his studies of nutritional therapy. Later, when he reported on the association of a vaccine with autism, comments in the medical journals were mostly negative.

Although the major medical journals gave the impression that Rimland’s book had ended serious work on the “psychogenic” factors in autism, there have been several well known dissenting psychiatrists. Peter Breggin has said that the changed atmosphere following Rimland’s publication was

produced by political pressure from parents, rather than by valid evidence. Frances Tustin wrote that “There is persistent denial by American society of the causes of damage to millions of children who are thus traumatized and brain damaged as a consequence of cruel treatment by parents who are otherwise too busy to love and care for their babies.” A study of adopted Romanian babies confirmed the observations of many people in previous decades that the impersonal treatment in orphanages damages many of the children.

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The reaction of the medical profession to Rimland’s interest in nutrition and vaccination showed that their understanding of “biological” and “genetic” determination was more extreme than his. Rimland, at least when I knew him in the 1980s, was distinctly uninterested in the possible causative or therapeutic roles of hormones, despite his recognition that certain aspects of the environment could be causative and therapeutic. His critics were committed to the eugenicist’s view of biology and inheritance—if it’s in the genes, it’s incurable, and since our body is an expression of the genes, harsh environments don’t affect our constitution unless they cause genetic mutations.

Some people are arguing that autism is 80% determined by genes, similar to the older argument about the heritability of intelligence. Twin studies have been used to make this argument—identical twins are more concordant for autism than fraternal twins, who are more concordant than siblings in general (Bohm, Stewart, Healy, 2013). Genetic determinists have been arguing that the twin effect is an effect of genes, but for that to be a valid argument, it would be necessary to show that sharing a placenta does not constitute having a very similar environment during the development

of identical twins, or that sharing a uterus during the development of fraternal twins isn’t having a more similar environment than siblings who are gestated singly.

The ferocity with which the genetic determinists have attacked even the limited recognition of environmental effects on fetal development, or the effects of nutrition on brain function, or the effects of exposure to toxins and antigens on health and personality, isn’t the result of a mere “scientific disagreement.” Their blindness to evidence is caused by the way their brains developed, under the influence of their environments. They recognize that their entire sense of themselves, and their theory of being, is challenged by those who show that our present and future are more than effects of the inherited past.

Charles Darwin recognized the absurdity of believing that random changes could ever construct the complexity of an organism, so he proposed that “gemmules,” formed in the various parts of the body as they adapted to their environment, entered the germ cells to affect the next generation. Even though that theory didn’t include a role for Lamarckian striving guiding the adaptations, it was completely rejected by so-called Darwinists (because it implied that the organism wasn’t entirely a matter of its inherited past), until fairly recently, when “epigenetic” influences started to be recognized. To the neodarwinists, epigenetic changes are only temporary and superficial, but they could nevertheless account for developmental causation of autism, or of variations in mental ability. But the developmental process isn’t a matter of passive accumulation of new traits, any more than it is a passive unrolling of old traits.

Experimental embryology made it clear that development is an intentional process. An embryo can survive extreme disturbances, by adjusting its structures and metabolism, but those adjustments to difficult intrauterine conditions can sometimes make adaptations during childhood problematic. At each moment of an embryo’s development, it is absorbing nutrients and becoming something more than it had been. Its needs will vary depending on what it becomes. If the materials aren’t in balance, some of the constructive processes will slow, and proportions change. If glucose or oxygen is

deficient, or if another deficiency interferes with their use, the structures that need less energy may continue to grow, while the structures with the greatest need for energy may stop growing. In experiments, just changing the temperature of the uterus during gestation changed the length of legs in proportion to the body. The proportions of the different parts of the brain are, like the rest of the body, dependent on the unique developmental conditions of the individual. The nervous system participates in the development of all of the tissues in the body during gestation, and at birth the external senses introduce powerful new developmental signals. At birth, the baby is experiencing and adapting to touches, odors, sights, and sounds, and these either satisfy or frustrate its needs.

These processes of revision are continuous, from the parents' gametes through fetal development and childhood into maturity. At any stage, an abundance of resources can restore a more expansive trajectory of development.

From the moment of conception, and before, adversity leaves impressions in the form of DNA methylation and histone acetylation; the organism revises itself based on experience, anticipating that the future might be similarly stressful. These processes of revision are continuous, from the parents' gametes through fetal development and childhood into maturity. At any stage, an abundance of resources can restore a more expansive trajectory of development.

Ashley Montagu, in his book *Touching: The Human Significance of the Skin*, argued that the newborn's skin contact with the mother was an essential factor in the development of the mind and body. "It is through body contact with the mother that the child makes its first contact with the world, through which he is enfolded in a new dimension of experience, the experience of the world of the other." Common medical practices that interfere with immediate and continuous skin

contact are known to increase the risk of autism—for example, cesarian section delivery, use of anesthetic, bottle formula or intravenous feeding. In both animals and humans, touching causes epigenetic changes in DNA (Löken, et al., 2009; Loke, et al., 2015; Lippmann, et al., 2007; Lee, et al., 2007; Laudenslager, et al., 1995). Nurture is an essential part of Nature.

In the US, about 10% of babies are premature, and receive special hospital attention. In many hospitals, even full term babies are routinely separated from the mother except for breast feeding. The interrupted skin contact isn't the only risk in a hospital. In the first minutes, a newborn recognizes the pattern of a face, and prefers to look at it, rather than at other patterns. In the first day, babies prefer an image of their mother's face over that of a stranger; they learn to identify a face with only a brief glimpse (Walton, et al., 1992, 1998). Newborn humans and monkeys prefer to look at face images of their own species. The pleasure they get from seeing their mother's face undoubtedly reinforces the pleasure of continuous skin contact.

All animals that have faces use "eye contact" in emotional communication, and it seems that quick recognition of individuals by their face is a general animal ability. The innate need to see the mother's face is paralleled by an innate ability to mimic—a smile elicits a smile. All animals use "body language" to communicate—when a facial expression or gesture or stance is perceived, the ability to mimic means that the feeling behind the gesture is simultaneously perceived. This awareness of intention isn't limited by species; for example, a dog responds to a goat's threatening pose. Cats, being aware of this intelligence in their prey, sometimes assume an exaggeratedly nonchalant manner, to overcome the wariness of their intended victim.

One of the ways that autism has been described is that it involves the lack of a "theory of mind," that is, a recognition that other people have a separate consciousness and emotions. This is sometimes called mind blindness, or emotion blindness. When I was in graduate school, a psychology professor told me that the reason babies don't need anesthesia during surgery is that, before myelination in their brain is complete

around the age of 18 months, they don't experience pain. A biology professor said that we can't know that animals experience pain because they can't speak. Many years before that, Sigmund Freud had written that without language, there is no consciousness. In the US in the 1990s, a survey found that the great majority of circumcisions were performed without any anesthetic; the usual explanation was either that it didn't cause pain, or if it did, the baby didn't remember it. I always understood that my professors, and a large proportion of the medical and scientific professions, suffered from some sort of mental defect, but I didn't have a name for it. Now I understand that it is a form of autism, mind blindness. Without a recognition of another's mind, there can be no empathy.

Touch is ten times stronger than verbal or emotional contact, and it affects damn near everything we do.

Ashley Montagu

It used to be common for doctors to tell new mothers that babies shouldn't be picked up whenever they cried, and nursery workers are still often instructed to minimize physical contact with the babies, and formula feeding, with early weaning, has been promoted by most doctors, and is still the rule in the US and several other countries. Several studies have shown a decline in the empathy of medical students in their third year, when they begin taking care of patients; the stress of excessively long hours of work is probably a factor. Studies of beginning college students have shown much lower empathy levels (or at least an increased willingness to express their lack of empathy) than in previous generations, suggesting that something is happening in the culture to make a lack of empathy more socially acceptable. By many of the accepted definitions of autism, the medical profession fosters autism, and our general culture is becoming more autistic.

In the family of defining features of autism—mind blindness, communicative difficulty, lack of eye contact, avoidance of physical contact with people, repetitive movements,

narrow interests, reduced understanding of the continuing succession of events—there is a common factor, namely, inflexibility. The brain has an extremely high metabolic rate, using energy to adapt to the constant inflow of sensory information from the body and its surroundings. To the extent that it lacks energy, it reduces and simplifies. With full energy, it builds a continuing model of itself and the things it interacts with, each of which is a process. In a state of deficient mental energy, things become categories rather than processes, and they don't occupy a place in an ongoing life story. Understanding the difference between cause and effect is an energetic process; waiting, expecting, and planning require the maintenance of a complexly flowing model of the situation. There is evidence of defective energy metabolism in autistic children (Vallée and Vallée, 2018; Chugani, et al., 1999; van der Sloot, et al., 2017).

Many things are involved in the brain's energetic process, and the rate of chemical reactions is one factor. Increasing the brain's temperature can improve its functioning. Several studies have confirmed parents' observations that a fever improves symptoms in autistic children. "Results revealed fewer autistic-like behaviors for children with fever compared to controls, with more than 80 percent of fever subjects showing some behavioral improvements and approximately 30 percent exhibiting dramatic improvements." (Goldstein, 2007; Curran, 2007; Taylor, 2016.)

Practically every structure in the brain has been studied as "the location of the defect" in autism. The cerebellum, the prefrontal cortex, the reticular formation, the anterior cingulate system, nucleus accumbens, nucleus tractus solitarius, thalamus, amygdala, insula, auditory cortex, olfactory cortex, visual cortex, etc., have been found to have a different function or structure in autistic and normal brains. The degree of over-concreteness in autism research is similar to that in cancer and heart disease research, and it reveals the autistic quality of mainstream science. In 1946 Abraham Maslow distinguished two approaches to the practice of science, one guided by methods and means, another guided by a consideration of the importance of solving problems; if you have a

hammer, everything looks like a nail. Context blindness is a common feature of science and autism.

When we ask what man wants of life, we deal with his very essence.

A. Maslow

Things in the environment, or substances produced in reactions to environmental stress, that might cause autism, include prenatal and neonatal exposure to radiation, including isotopes from the power industry, bomb testing, Chernobyl, and Fukushima; exposure to air pollution, including nitrogen oxides, ozone, carbon monoxide, sulfur dioxide, and particles (Jung, et al., 2013); aluminum (Mold, et al., 2018), lead, mercury, manganese, arsenic, cadmium, chromium, manganese, and nickel (Windham, et al., 2006); acetaminophen, infections, endotoxin, exogenous and endogenous estrogens, hypothyroidism, progesterone deficiency, agmatine deficiency, serotonin excess, endogenous nitric oxide (Sweeten, et al., 2004), and vitamin D deficiency. All these have established associations with the risk of autism.

When energy is deficient, cells are susceptible to damage from normal levels of stimulation. Restraining excitatory reactions is at least protective, and it often improves functioning. Anti-excitotoxic substances include progesterone, memantine, minocycline, and agmatine. A high ratio of CO₂ to lactate, reducing intracellular pH, is important for preventing excessive excitability. Thyroid hormone, besides directly increasing energy and the CO₂/lactate ratio, tends to increase the brain's temperature, and to increase the ratio of progesterone to estrogen.

An environmental factor which has increased parallel to the autism epidemic, and which contributes to brain swelling, inflammation, reduced energy production, increased excitability, oxidative damage and undesirable shifts in hormones, is the use of polyunsaturated fats as food. People with autism have been found to have abnormally high levels of prostaglandin, isoprostanes, and leukotrienes, which are associated with lipid

peroxidation and brain inflammation (El-Ansary and Al-Ayadhi, 2012; Ming, et al., 2005). Vitamin D has a broad range of antioxidant and anti-inflammatory actions that probably contribute to its therapeutic effects in autism (BaSalamah, et al., 2018; van der Sloot, et al., 2017; Cannell, 2008, 2017; Saad, et al., 2016).

If nature is essentially interactive, interdependent, ecological, and organismic, nurturing is an essential part of nature. When science is fundamentally mistaken about the nature of causality and being, it will be problem blind, and mostly ineffective in dealing with issues such as autism. Jose Ortega y Gasset's famous statement is relevant for both science and autism: "I am I and my circumstance; if I don't save it, I don't save myself."

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