

Autism in Premies

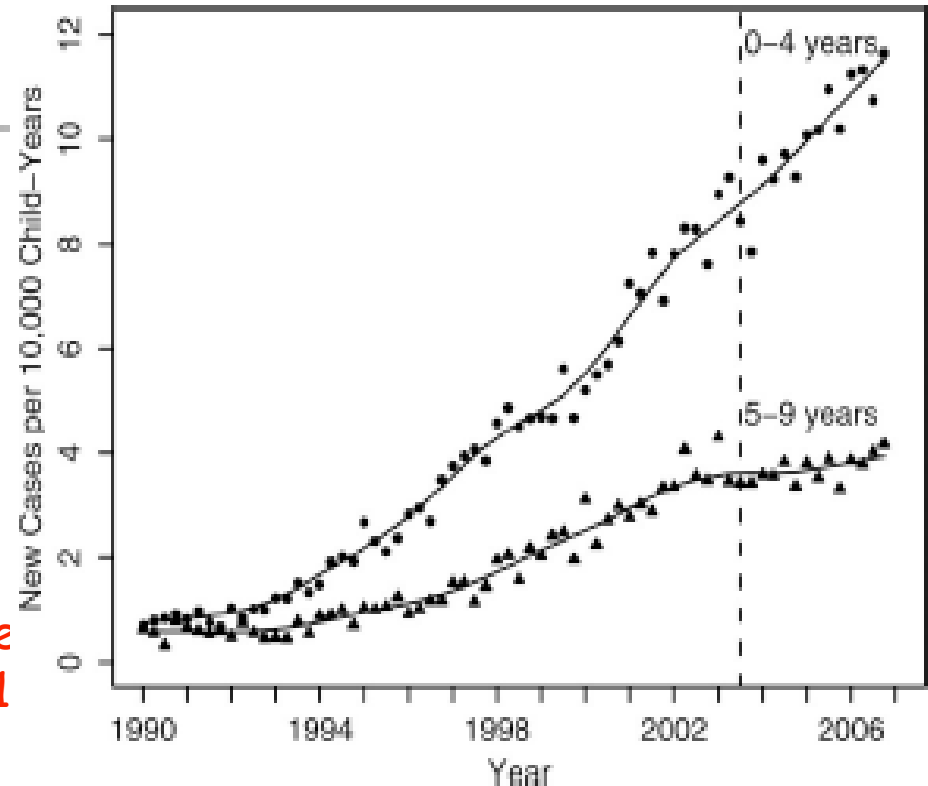
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Safra Children's Hospital, Tel Hashomer



Prevalence of ASD

- Prior to 1990 1:2000³
- 2000-2004 1:250
- 2004-2010 1:166
- 2011-2012 1:100
- 1:54) 1:88 2013 boys, 1:252 girls(
- 1:67 2016
- This represents a 23 percent increase from the CDC's previous estimate of 1 in 110 children, reported in 2009. It's a 78 percent increase over the agency's 2007 estimate of 1 in .150
- Fastest growing disability- last 20 y



***Environmental Health News, 2009

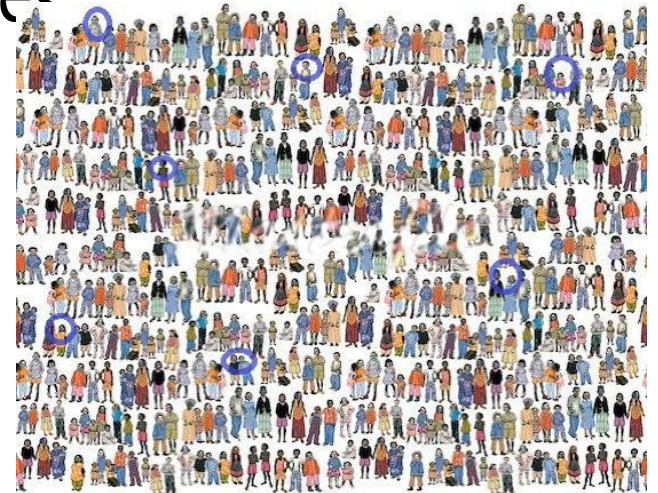
¹Kogan et al, Pediatrics, 2009

²Kim et al., Am. J. Psychiatry, 2011

³Ritvo et al, Am J Psychiatry, 1989

Why?

- Broader diagnostic age- effect of “crowding”
- Broadening diagnostic criteria- mild/ severe
- Better ascertainment of cases
- Development of gold-standard diagnostic tools
- Better training of clinicians
- More intervention and services
- National laws
- True rise due to :
 - Epigenetic factors
 - Environmental factors
 - *Prematurity



THE CONCEPTION OF WHOLE AND PARTS IN EARLY INFANTILE AUTISM

LEO KANNER, M. D., BALTIMORE, MD.

In 1943, under the title *Autistic Disturbances of Affective Contact*, I published 11 cases of infantile psychosis noticed as early as in the first two years of life. Since then, I have seen nearly 100 such children, and knowledge of many others has come to me from psychiatrists and pediatricians in this country and abroad. To satisfy the need for some terminological identification of the condition, I have come to refer to it as "early infantile autism."

Briefly, the characteristic features consist of profound withdrawal from contact with people, an obsessive desire for the preservation of sameness, a skillful relation to objects, the retention of an intelligent and pensive physiognomy, and either mutism or the kind of language that does not seem intended to serve the purpose of interpersonal communication.

The syndrome of early infantile autism is by now reasonably well established and commonly accepted as a psychopathologic pattern. The symptom combination in most instances warrants an unequivocal diagnostic formulation.

tails, in complete photographic and phonographic identity. No one part of this totality may be altered in terms of shape, sequence, or space. The slightest change of arrangement, sometimes so minute that it is hardly perceived by others, may evoke a violent outburst of rage.

This behavior differs from ordinary obsessive ritualism in one significant respect: The autistic child forces the people in his world to be even more obsessive than he is himself. While he may make occasional concessions, he does not grant this privilege to others. He is a stern and unrelenting judge and critic. When one watches such a child for any length of time, it becomes evident that, unless he is completely alone, most of his activities go into the job of serious, solemn, sacerdotal enforcement of the maintenance of sameness, of absolute identity.

It is, of course, impossible to live even in Kaspar Hauser fashion without the introduction of new situations. A child is weaned from the breast, then from the bottle; new food stuffs are introduced; he is taken out for his first walk; the family may move to a



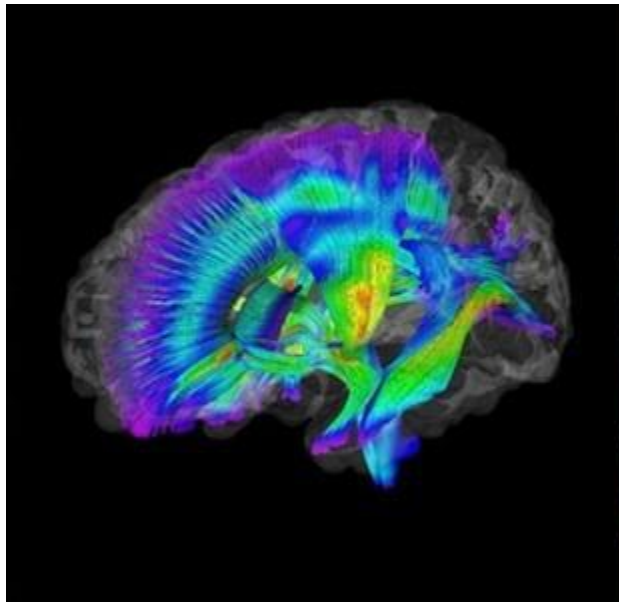
Very Early Markers



Differences in white matter fiber tract development present from 6 to 24 months in infants with autism

Wolff JJ, Gu H, Gerig G, et al. Am J Psychiatry. 2012; 169: 589-600

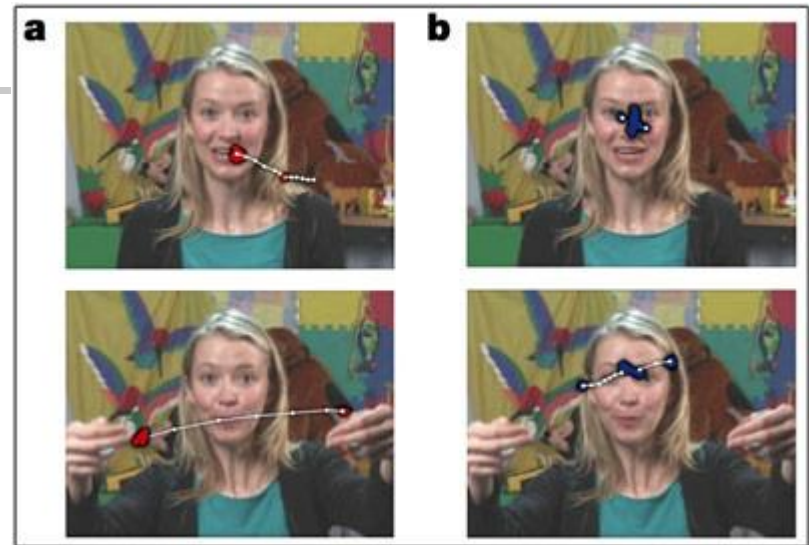
- observed pattern of differences in all 15 white matter tracks they examined in the brain



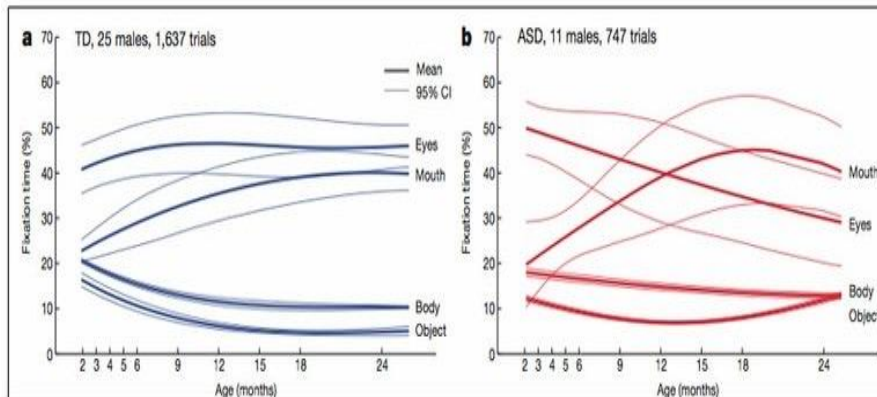
Jones W, Klin A. Attention to eyes is present but in decline in 2-6-month-old infants later diagnosed with autism. *Nature*, Nov. 6, 2013



- steady decline in attention to others' eyes within the first two to six months of life



Decline in eye fixation reveals signs of autism present already within the first 6 months of life. Data from a 6-month-old infant later diagnosed with autism are plotted in red. Data from a typically developing 6-month-old are plotted in blue. The data show where the infants were looking while watching a video of a caregiver.



Prolonged Auditory Brainstem Responses in Infants With Autism

Oren Miron, Daphne Ari-Even Roth, Lidia V. Gabis, Yael Henkin, Shahar Shefer, Ilan Dinstein, and Ronny Geva

Research in Developmental Disabilities 49–50 (2016) 76–85



ELSEVIER

Contents lists available at [ScienceDirect](#)

Research in Developmental Disabilities



Fetal cerebral ventricular atria width of 8–10 mm: A possible prenatal risk factor for adolescent treated Attention Deficit Hyperactivity Disorder (ADHD)



Zvi Kivilevitch ^{a,*}, Lidia V. Gabis ^b, Eldad Katorza ^c, Reuven Achiron ^c

STRESS & HEALTH

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Psychiatry,

Medicine

Research Article

Long-Term Maternal Stress and Post-traumatic Stress Symptoms Related to Developmental Outcome of Extremely Premature Infants

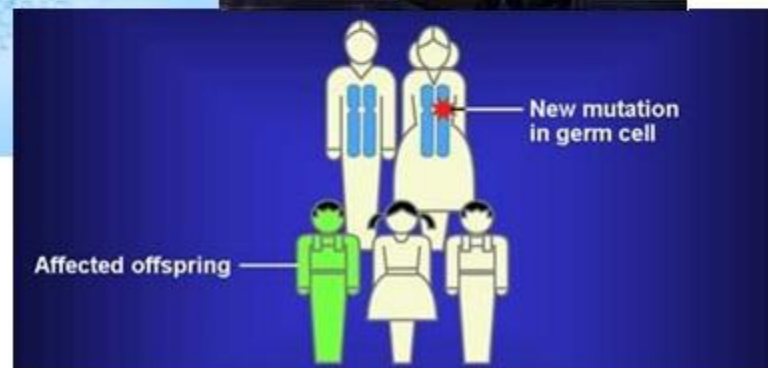
Gadi Zerach , Adi Elsayag, Shahar Shefer, Lidia Gabis

First published: 6 November 2013. Full publication history:

Role of Intervention

Infants and Toddlers With Autism Spectrum Disorder: Early Identification and Early Intervention

Brian A. Boyd, Samuel L. Odom, Betsy P. Humphreys and Ann M. Sam
Journal of Early Intervention 2010; 32; 75



The case study of Nesli

- Born at 26 w, 504 gr. after 10 y of IVF
- 3.5 months in NICU during which he had :
 - candida sepsis and meningitis, BPD, nephrolithiasis
 - at 2 y f/u normal motor and fine motor as corrected age, some delays in language and communication
 - at 2.5 y high language skills, started to recognise letters in Hebrew and English, echolalia, minimal non verbal communication, very stunted growth
 - diagnosed with Autism Spectrum Disorder and comorbid anxiety
 - at 3-4 y placed in special observational daycare at our centre
 - at 5-6 included in regular kindergarten with aide (started GH)
 - at age 6 did not meet criteria for ASD, diagnosed with ASHD
 - at age 8 more social difficulties, diagnosed with High Functioning ASD



Autism and prematurity-
is there a connection ?



PREMEES STUDIES



- % 13 - 12 of **autism cases** stem from pregnancy issues that result in prematurity, low birth weight or caesarian section
 - CDC report :
 - For the 1994 cohort, average PAFs were **4.2%**, 0.9%, and 7.9% for PTB, SGA, and CD, respectively. The summary PAF was 13.0% (1.7%-(19.5%)
 - For the 2000 cohort, average PAFs were **2.0%**, 3.1%, and 6.7% for PTB, SGA, and CD, respectively, with a summary PAF of 11.8% (7.5%-(15.9%)

Is Autism more common in Premies ?

Large study from Alberta, Canada :

() The Journal of Pediatrics(

- 273,343 births in Alberta, Canada, from 1998 to 2004 grouped by # of weeks of gestation.
- 17,830 born premature (anytime short of 37 weeks of gestation)
- The risk of developing autism is inversely proportional to the length of gestation- total double incidence in premie
- 8 of 657 (1.22 percent) preterm babies born before completing 28 weeks of gestation have autism
- 80 of 13,108 preterm babies (0.61 percent) born between 33 and 38 weeks.
- For babies born full term, or between 37 and 41 weeks of gestation, 0.5 percent have autism. Researchers see the same prevalence in babies born after 41 to 43 weeks.

PENU study :


- 1,105 children who weighed less than 4 pounds, 6.5 ounces (2,000 grams) at birth who were born between Oct. 1, 1984, and July 3, 1989
- 16y later screening of 623 of those children for ASD
- When 189 of the children turned 21 years old, 60 % of those who screened positive for an autism spectrum disorder, and 24 % of those who screened negative, were clinically diagnosed with ASD
- Five times higher than the general population



"Premature Behavioural Phenotype"

- Preterm birth is as a significant risk factor for :
 - psychiatric disorders: 3- to 4-fold increased risk learning difficulties: up to 50% below 32 weeks
 - language impairments
 - increased risk for inattention
 - anxiety
 - social difficulties
- Increased prevalence of autism spectrum disorders (ASD) in children born preterm

Autism & Prematurity- cause or consequence ?

- 
- A stylized graphic of a person with their arms raised in a 'V' shape, colored in red, purple, and yellow, positioned to the left of the list.
- Altered brain development after preterm birth
 - Fetal exposure to stress or infection
 - Immature brain vulnerability to external changes
 - Specific vulnerability of language and communication pathways
 - Shared causes of premature birth and ASD (multiple pregnancy, IVF, hormonal manipulation)
 - Epigenetic vulnerability

Normal Brain Architecture and plasticity

- Highly integrated neural circuits that are built in a specific sequence
- Within the Time Constraints of Sensitive Periods

The good news

- The window of opportunity for skill development generally remains open for many years

The sobering news

- Positive adaptation in the face of impaired brain circuits is more difficult and costly than getting it right the first time



Research Questions:

- Is autism more common in prematurity?
 - relationship to week of delivery, perinatal complications, comorbidity, brain findings gender
- Is autism different in prematurity as compared to term born children in terms of :
 - age of identification
 - early signs
 - additional risk factors- parental age, gender
 - severity
 - comorbidity
 - outcome
- Prospective research of screening tools for early identification of ASD in prematurity



Initial findings

Leora Allen analysis of our database :



- Cohort of 2011-2015 premature babies referred to Child Development Centre for F/U :
 - 844 children
 - multiple pregnancies: 48.6% twins, 3.6% triplets
 - ave delivery 31.8 weeks (range 24-37, (38-40
 - BW 1570 gr (368-3550 gr)

Diagnoses	N	%
Global Developmental Delay	43	5.1%
Cerebral Palsy	19	2.3%
ADHD	38	4.5%
Autism Spectrum Disorder	37	4.4%

Thank you!

Leora, keep up the good work!

Save The Date:

הכנס השנתי השמיני של מרכז קשרת המכון להתפתחות הילד, בבית החולים אדמונד וילי ספרא לילדים, המרכז הרפואי שיבא, תל השומר

"ילדים, מתבגרים ובוגרים עם אוטיזם: תפקוד, השתתפות והשתלבות"

3/1/2017 - 4/1/2017

מושבים עיקריים בכנס:

- שימי בתפקוד ובהשתתפות בסיוע תרופות - הצגת חידושים במחקר התרופתי
- מודלים של התערבות וטיפול - מתאוריה למעשה
- תיאורי מקרה - סיפורים משמחתיים, סיפורים אישיים, סיפורי הצלחה
- ספורט אתגרי ואמנויות כאמיקים טיפוליים
- שימוש בעוצמות וחוזקות לקידום עצמאות והשתתפות
- המעבר לבית הספר - התמודדות והשתלבות
- השתלבות במסגרות חינוכיות, תמונות נוער, שירות צבאי, חוגים
- השתלבות בתעסוקה לבוגרים

בתוכנית:

3.1.2017 - הרצאות להורים, לקהל הרחב ולאנשי מקצוע בשיתוף העמותה לתסמונת האיקס השביר בישראל בדגש על שימור תפקוד, השתתפות והשתלבות במשפחות המתמודדות עם מוגבלות תפקודית התפתחותית

4.1.2017 - הרצאות לאנשי מקצוע

born Sept 2016, 227 gr, 22 cm

World's smallest surviving premature baby fought the odds and won!

Emilia Grabarczyk's parents were warned her chances of survival were slim due to being so very small. She's now nine months old.

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