

The Autism Spectrum Disorders: Interventions

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No Conflict of Interest

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Definitions

- Three terms I use interchangeably

Autism = Autism Spectrum Disorders (ASM) =
Pervasive Developmental Disorders (PDD)

- **Autism is a behaviorally-defined diagnosis!**

- ❖ The ASM encompass the entire range of severity
- ❖ The ASM diagnosis applies irrespective of etiologies
- ❖ Dimensional, not dichotomous Dx → fuzzy margins, overlaps among disorders

DSM IV PDD

PDD = pervasive developmental disorder,
alias, the autism spectrum (ASD)

1. Autistic disorder
2. Asperger disorder
3. PDD-NOS (PDD not otherwise specified)
(which is not the same thing as PDD!)
4. Disintegrative disorder
5. (Rett disorder)

Etiologies of Autism

- Multiple etiologies (causes):
 - ❖ most often genetic (mostly multigenic)
 - ❖ some acquired;
 - ❖ some genetic susceptibility?
- In ~ 80-90% of cases, etiology unknown but genetically (and environmentally?) influenced
- Diagnosable causes multiple but each exceedingly rare (10-20% in the aggregate)

Potential targets of intervention

- Prevention
 - ❖ Not available because many putative etiologies
- Etiologies
 - ❖ Multiple → even if known, no one Rx applies to all
- Pathophysiology
 - ❖ Main neuropathologic evidence: prenatal process
 - ❖ Pharmacology: targets putative monoamines, etc.
- Symptomatology
 - ❖ Education, i.e., influence brain development/plasticity
 - ❖ Pharmacotherapy
 - ❖ Both combined

Needs to be addressed

- Needs of the child
 - ❖ Prompt, *targeted* workup
 - ❖ *Core deficits*: educational/behavioral intervention
 - ❖ *Associated symptoms* (e.g., epilepsy, apraxia, ADHD, etc.) that need medical or other Rx
- Needs of the parents and family
 - ❖ Practical logistical help
 - ❖ Education about autism and *how to deal with it*
 - ❖ Emotional support for all family members

Problems with the evidence

- Very few controlled before-after studies of the effectiveness of behavioral or medical interventions
- Even fewer controlled studies comparing the effectiveness of different treatment approaches
- Flaws of studies: Small numbers of children, ill-defined selection criteria, short-term studies

Symptoms to be remediated

- *Troublesome* social behaviors, especially aggressivity, joint inattention, tantrums
- Inadequate communicative ability
- *Troublesome* stereotypies & rigidity
- *Troublesome* sensory issues
- Self-injury
- Sleep problems
- Attention deficits
- Irritability, inattention
- Epilepsy
-

Education is our most powerful tool for altering brain development/function

- Evidence:
 - ❖ functional MRI in amputees, blindness, deafness
 - ❖ altered fMRI in treated dyslexics
- But efficacy of intervention is constrained by the severity of the underlying brain dysfunction
- In 2005, pharmacotherapy only addresses some troublesome symptoms, not core deficits

Age at intervention

- The brain is most plastic while brain development is most rapid
- The earlier targeted education starts, the easier the learning of new skills
- Consequently, early diagnosis is crucial (even though controlled studies not available to show this in autism)

Characteristics of early intervention

- Must be individualized to each child's needs
- Must involve parents to teach them effective approaches to apply at home
- Early is more effective
 - ❖ Needs to be intensive
 - ❖ Needs to continue year-round

Educational management

- **No cure!** – the goal is optimal functional outcome – within the constraints of individual brain biology!
→ less severely affected children do better...
- Child needs to be taught specific social & other skills that other children “pick up” on their own
- Parents need training in behavior management
- Address needs of all family members!
- Discourage unproven therapies

Needs of other family members

- All need to be aware of goals/strategies of intervention
- All need to learn what autism is & is not
- Parents
 - ❖ Personal support, on-going individual help
 - ❖ Training in management strategies
 - ❖ Respite & practical assistance
 - ❖ Opportunity to fulfill their own needs
- Siblings
 - ❖ Must not to be sacrificed to autistic sib
 - ❖ Need to learn to be tolerant helpers and advocates

Treatments of unproven specificity / efficacy

- Special diets
- Multivitamin & other supplements
- Hormones (e.g., secretin)
- Immunologic treatments (e.g., IV Ig)
- Antibiotics (e.g., against candida)
- Chelation of heavy metals (mercury, lead)
- Auditory desensitization training
- Sensory integration, vestibular stimulation
- Facilitated communication
- Anticonvulsants in the absence of clinical epilepsy? OK for their psychotropic effects
- Etc., etc.

Approaches to behavioral remediation

- All require preliminary and on-going functional behavioral analysis
- Developmental Individual Differences (Floor Time) (Greenspan) (one on one - encourages interaction and progress through developmental milestones)
- Individual operant conditioning: Applied Behavior Analysis – ABA (Loovas), pivotal response training (Koegel) etc. – effective to develop compliance, but not panacea (one on one, no peers, may not generalize)
- Structured teaching: Treatment & Education of Autistic and Related Communication Handicapped Children (TEACCH) (Schopler) (addresses needs of family & child)
- Integrated education: normal peers (\pm individual coach): provide role models, supplemented with individual training
- Mixed models (including parents in the classroom)

Remediation of social problems

- Bring child under adult control (compliance)
- Train joint attention, sitting
- Teach/practice social interactions (with adults and peers)
- Teach how to read social cues
- Teach how to react to frustration
- Teach that temper tantrums are no longer an effective communication tool

Remediation of social problems

- Provide varied & graded opportunities to
 - ❖ interact with small, then larger, groups of peers (e.g., well supervised nursery school, play dates, etc)
 - ❖ interact with varied adults (parents!)
 - ❖ participate in community activities (school, shopping, visits, sports, etc)

In schoolage children

- Ongoing social skills training in dyadic or triadic groups of specific & realistic interactions, with feedback and practice between training sessions
- Use of visual organizers to provide visual frameworks that demonstrate paths of interactions
- Training teachers & parents to do the training

(Dunn

2005)

Communication deficits

- Focus on meaningful communication through any channel (pragmatics are universally and persistently impaired)
- Analyze child's language deficits
 - ❖ is phonologic decoding impaired?
 - ❖ how impaired is comprehension?
- Operant conditioning often useful to get language started, but inadequate to train spontaneous/ conversational language use
- Visual language (pictures, Sign): does not retard/ inhibit oral speech!

Rigidity

- **Written/drawn schedules to minimize surprises**
- **Announce changes in advance**
- **Gradually practice flexibility – deliberate schedule deviances**

Stereotypies

- **Ignore stereotypies that are not too frequent unless they preclude more meaningful activities**
- **Operant conditioning to minimize troublesome stereotypies**
- **Medication?**

Atypical sensory responses

- Effectiveness of intervention is limited
- Ignore those that are not too troublesome
- Choose those stimuli to which to attempt desensitization
- Try to avoid the most troublesome stimuli
- No effective drug known

Self-injury

- **Extremely difficult to treat**
- **Analyze circumstances of its occurrence to avoid them**
- **No truly effective medication, including naltrexone**
- **Anafranil, SSRIs? – may be useful for obsessive/compulsive picking at sores**

Sleep disorders

- Goal: consolidate night sleep
- Avoid daytime naps
- Have regular sleep time
- Institute going to bed routine, resist parent lying down with child
- Do not stay up with child during the night (if child OK)
- Melatonin may help. Other drugs? (chloral hydrate, clonidine, guanfacin, welbutrin?)

Pharmacotherapy: role and limitations

- Adjunctive to behavioral interventions
- Identify treatment-responsive targets
- Start with small doses & titrate
- Substitute before adding
- Questionable use of multiple medications

Attention deficit

- **Poor joint attention or real ADD?**
- **Use same behavioral approaches as for ADD. May/may not need medication**
- **Try stimulants: help some children, and effect ~ immediate and short-lived (methylphenidate, atomoxetine?)**
- **Other drugs: clonidine, guanfacine, paroxetine?**
- **Avoid risperidone unless there are other troublesome symptoms like aggressivity**

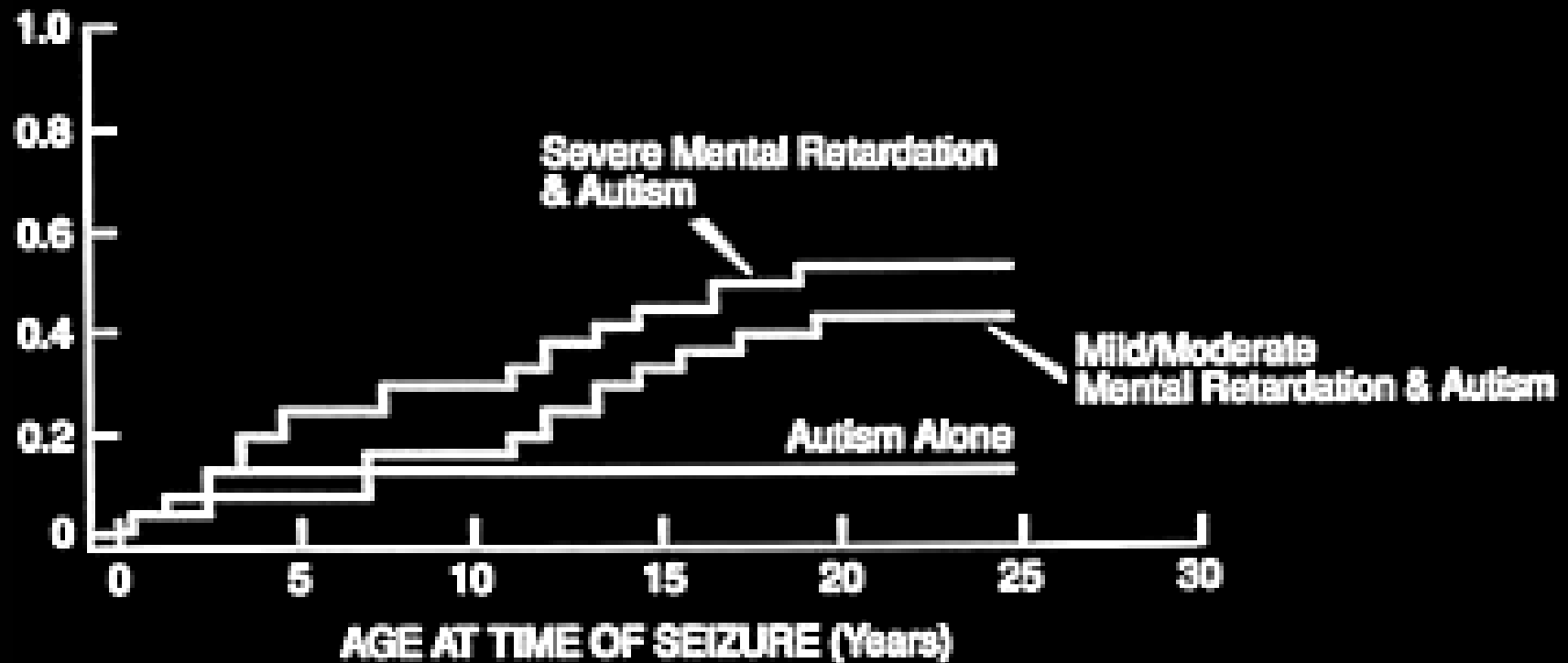
Aggression, irritability

- Dopamine blockers ([haloperidol](#) etc.) effective but major side-effects (sedation, dystonic & tardive dyskinesias, weight gain, etc.)
- Atypical neuroleptics, specific serotonin reuptake inhibitors - SSRIs ([risperidone](#), [paroxetine](#), [fluvoxamine](#), [fluoxetine](#), etc)
- Anxiolytics ([SSRIs](#), [propranolol](#), [benzodiazepines](#))
- Antidepressants ([clomipramine](#), [desipramine](#))
- Anticonvulsants as mood stabilizers ([valproate](#), [carbamazepine](#), [gabapentine](#), [topiramate](#))

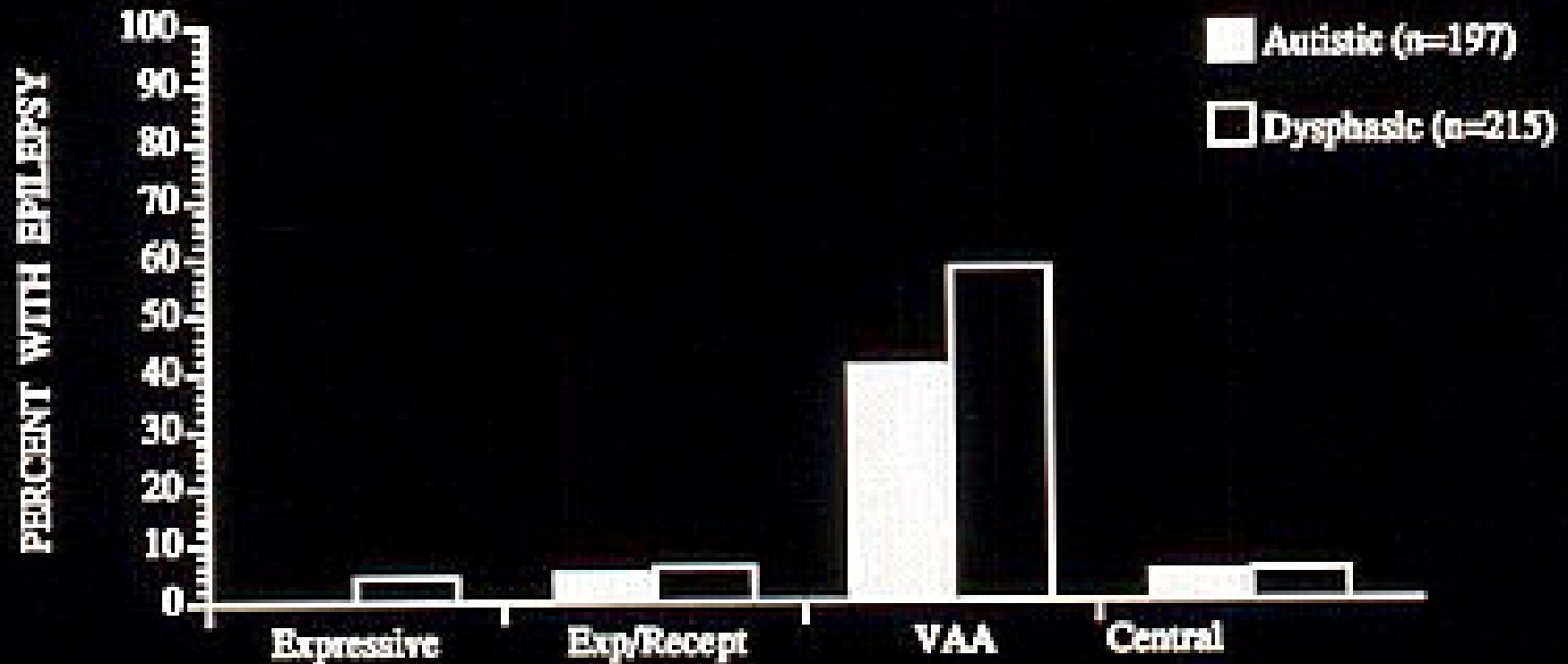
Autism: Epilepsy

- Cumulative risk: 30% by adulthood
- Onset peaks: toddler/preschool, adolescence
- Linked to severity of MR and other signs of brain dysfunction
- Role in early autistic regression?

Risk Factors for Seizures in Children with Autism



Epilepsy in children without severe MR classified by language subtype



Epilepsy

- **Clinical seizures are treated to achieve control as they would in any child**
- **Choice of medication: avoid sedative or other behavioral side-effects**
- **No evidence to date that medication is effective for subclinical epilepsy/EEG epileptiform activity, even in the face of language/autistic regression or ESES**
(dissenting opinion in selected cases: Deonna/Roulet-Perez, 2005)

Autistic Regression

- Regression of language, sociability, play
- Mean age: 21 months
- Reported by 1/3 of parents
- Improvement but not full recovery after a plateau of variable duration (months+)
- Trigger?
- Role of subclinical epilepsy?

Treatment of autistic regression

- No evidence to date that **anticonvulsants** effective for subclinical epileptiform activity, even in the face of language/autistic regression!
- Only anecdotal reports of effectiveness of **steroids, immunoglobulin G**, etc.
- No indication for **surgery** (subpial transection) unless intractable seizures

AUTISM: PROGNOSIS

- ❖ Static, life-long disorder
 - but
- ❖ Symptoms change with age
- ❖ Improve with early intensive education
- ❖ Prognosis unreliable in early childhood
- ❖ So do not “hang crepe” too early

Autism: Prognosis

- ❖ Prognosis variable, by no means hopeless, unreliable in very young children
- ❖ Predictors:
 - ❖ Preschool nonverbal IQ
 - ❖ Communicative language < 5 years
- ❖ Depends in part on the adequacy of family's and educators' management approaches

Key principles for management:

- ❖ Supplement auditory by visual inputs
- ❖ Provide a structured predictable environment
- ❖ Train social skills throughout childhood