FETAL ALCOHOL SPECTRUM DISORDERS: RELEVANCE TO FOSTER CARE.

Understanding, Identifying, and Helping the Highest Risk Babies, Children, & Caregivers

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http://depts.washington.edu/fadu/

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FETAL ALCOHOL SPECTRUM DISORDERS: RELEVANCE TO FOSTER CARE

Ann Streissguth	9:30-10:30
Nancy Whitney	10:30-10:50
Break	10:50-11:10
Therese Grant	11:10-12:00
Julie Gelo	12:00-12:30
Group Discussion	12:30-1:30
Adjourn	1:30

- IN GRATITUDE -
THIS RESEARCH FUNDED BY:

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Washington State DSHS

This Work is Done by a Team

- In Gratitude - My Colleagues:

- David Smith & Ken Jones, 1973
- Jim Hanson, John Graham, Sterling Clarren, Jon Aase
  - Paul Lemoine, Philippe Dehaene
- Donald Martin, Helen Barr, Paul Sampson, Fred Bookstein
- Joan Martin, Sharon L. Ramey, Cindy Herman, Betty Darby
- Heather C. Olson, Robin LaDue, Paul Connor, Janet Huggins
- Therese Grant, Cara Ernst, Pam Phipps
- David Haynor Christine Gleason, Raymond Sze
- Kieran O'Malley, Kay Kelly, Eric Schnapper

ALCOHOL-RELATED BIRTH DEFECTS

WASHINGTON STATE

"23,000 children (Birth to age 5) are accepted into Child Protective Services each year.

Case files are opened on nearly 5,000 with child abuse & neglect

Seattle Times, Dec 3, 2004: Debra Ronnholm & Rep. Ruth Kaji

WASHINGTON STATE

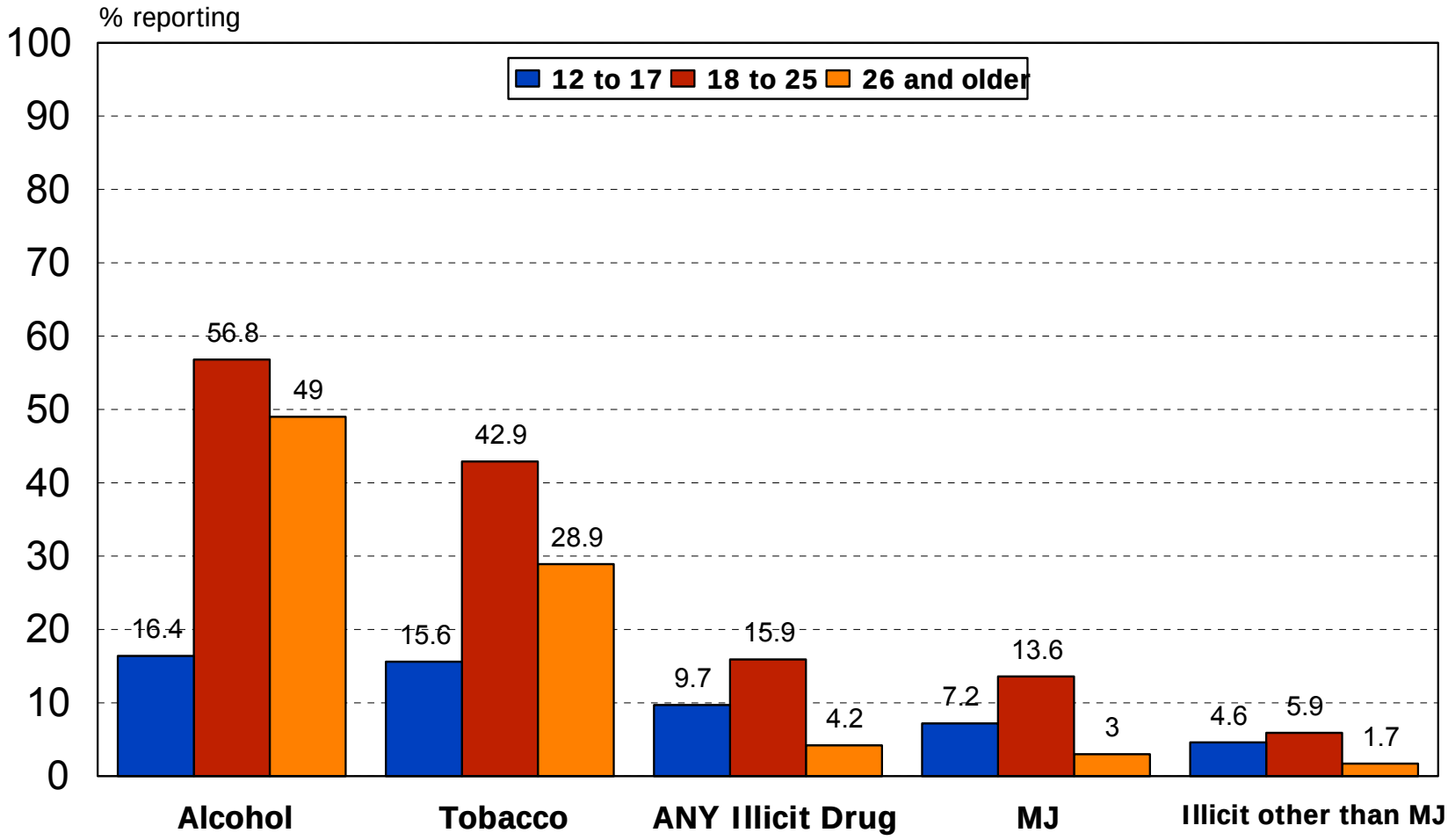
"Therapeutic treatment available for only 250 of the 4,800 children designated to need help.

State Budget is only $7 million per year for neglected & abused infants

Approximately 1% of state funding for corrections "

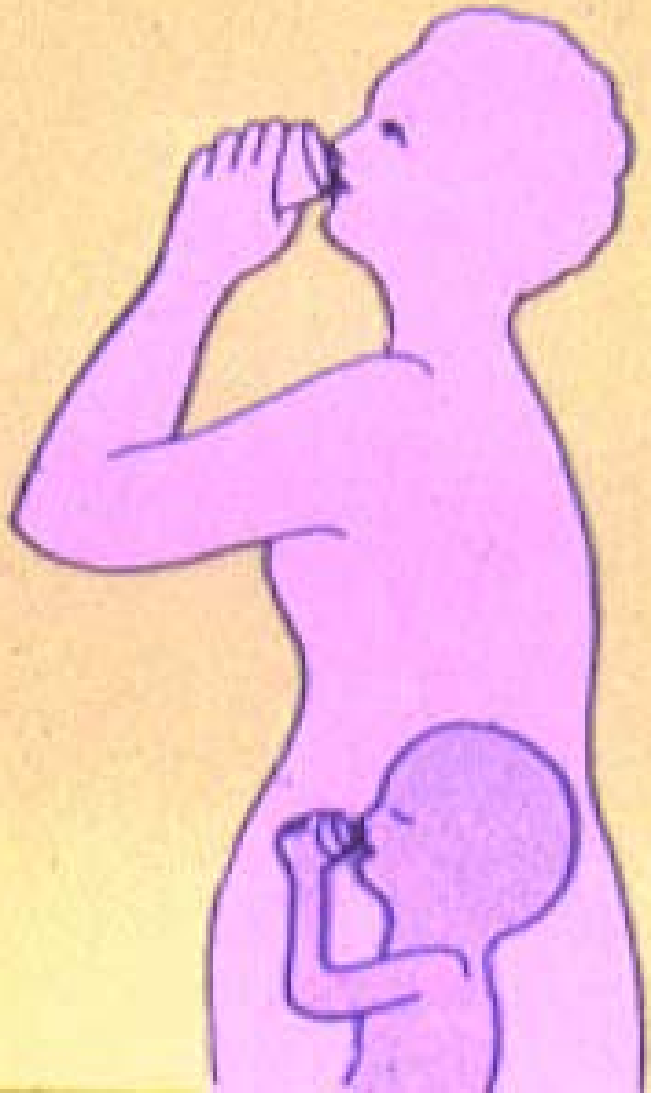
Seattle Times, Dec 3, 2004: Debra Ronnholm & Rep. Ruth Kaji

Past Month Alcohol, Tobacco, and Illcit Drug Use by Age Group



SOURCE: Substance Abuse and Mental Health Services Administration, Summary of Findings from the 2000 National Household Survey on Drug Abuse, NHSDA Series H-13, Rockville, MD.

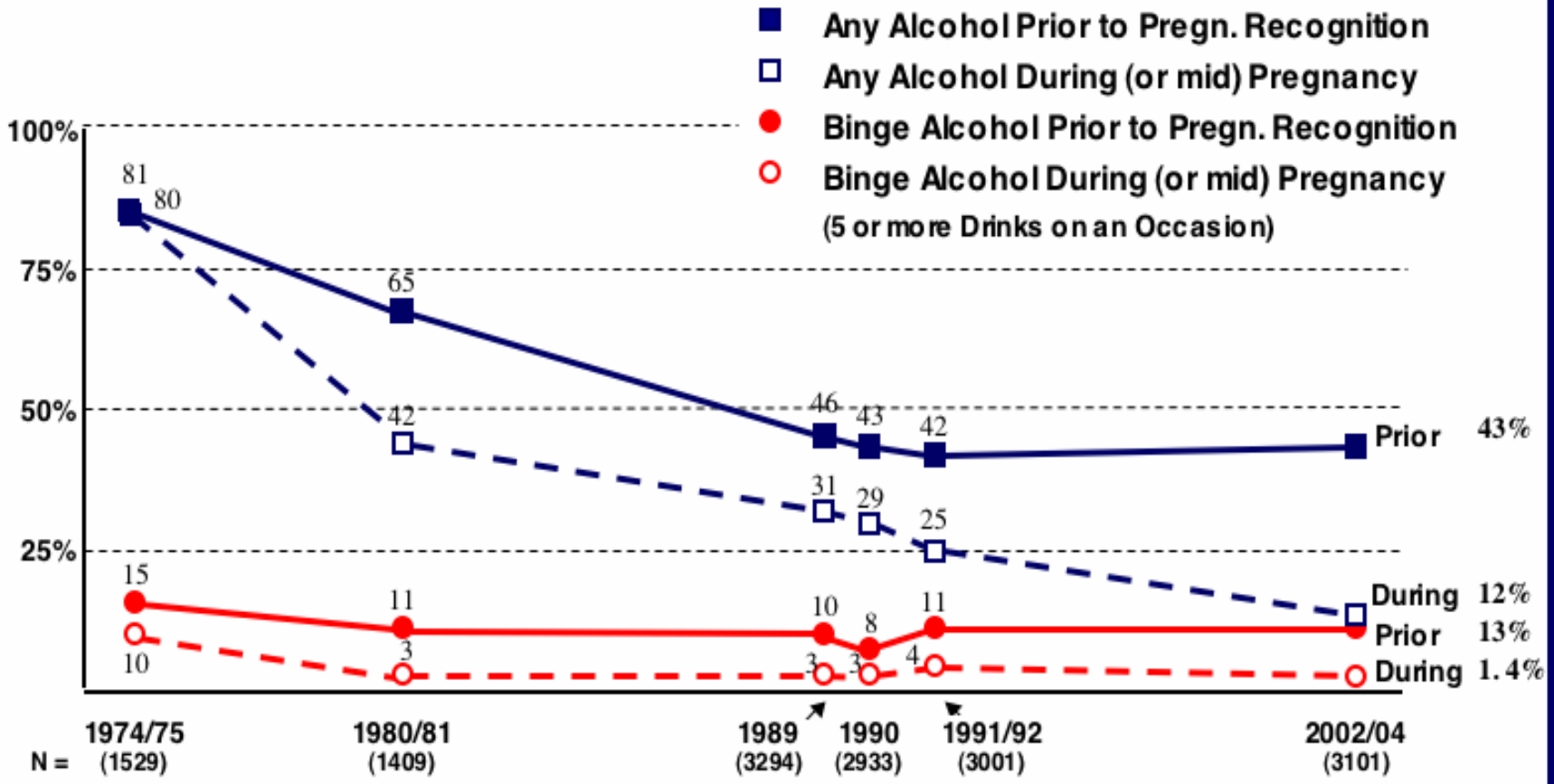
ETHANOL CROSSES THE PLACENTA FREELY



For Prevention and Intervention:

BOTH THE MOTHER
AND THE INFANT
ARE OUR TARGETS

Change in Alcohol Use & Binge Drinking During Pregnancy: Seattle/King County: 1974 – 2004



Fetal Alcohol Spectrum Disorders

Fetal Alcohol Syndrome (FAS) 1973

(Face Growth Brain) Jones,Smith, Hanson, Clarren

Fetal Alcohol Effects (FAE) 1976

(Examined & exposed, some alc. effects, not FAS)

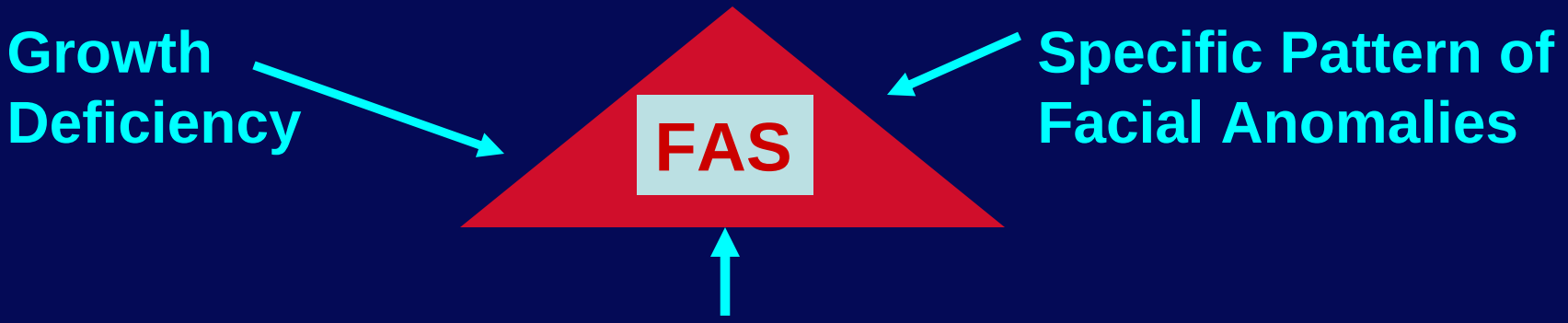
Alcohol-Related Neurodevelopmental Disorders (ARND) 1996

Institute of Medicine,1996

Static Encephalopathy: Alcohol Exposed 1997

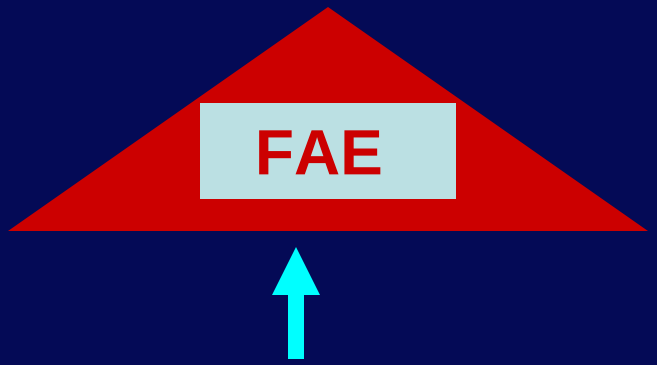
Sterling Clarren, Susan Astley,

UW FAS Diagnostic Clinic 206-685-9888



Central Nervous System Dysfunction
Organic Brain Damage

- Hyperactivity, attentional deficits
- Intellectual deficits, learning disorders
- Problems with memory, language & judgment
- Developmental delay, microcephaly
- Fine & gross motor problems, seizure disorder
- Mental retardation, structural brain damage



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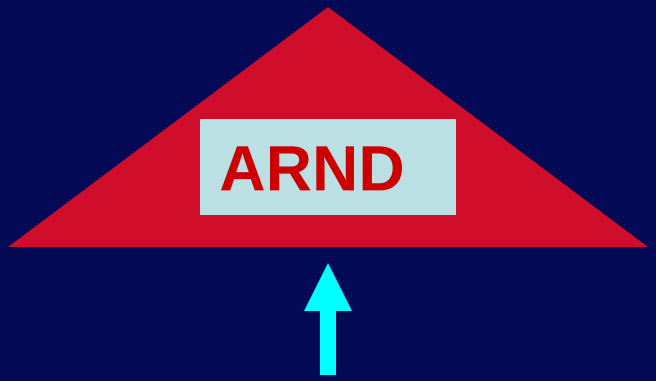

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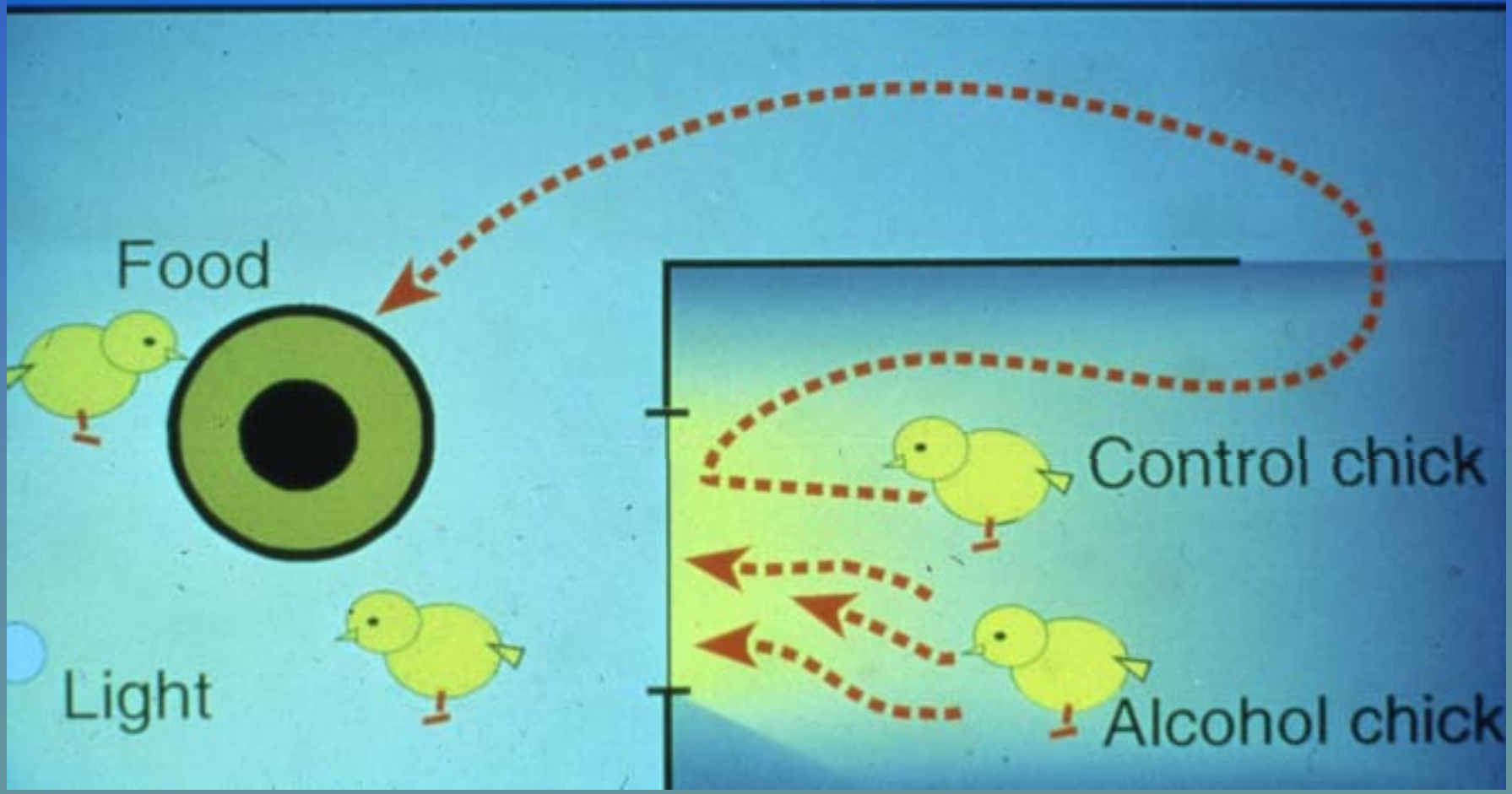
Behavioral Effects Following Prenatal Alcohol Exposure

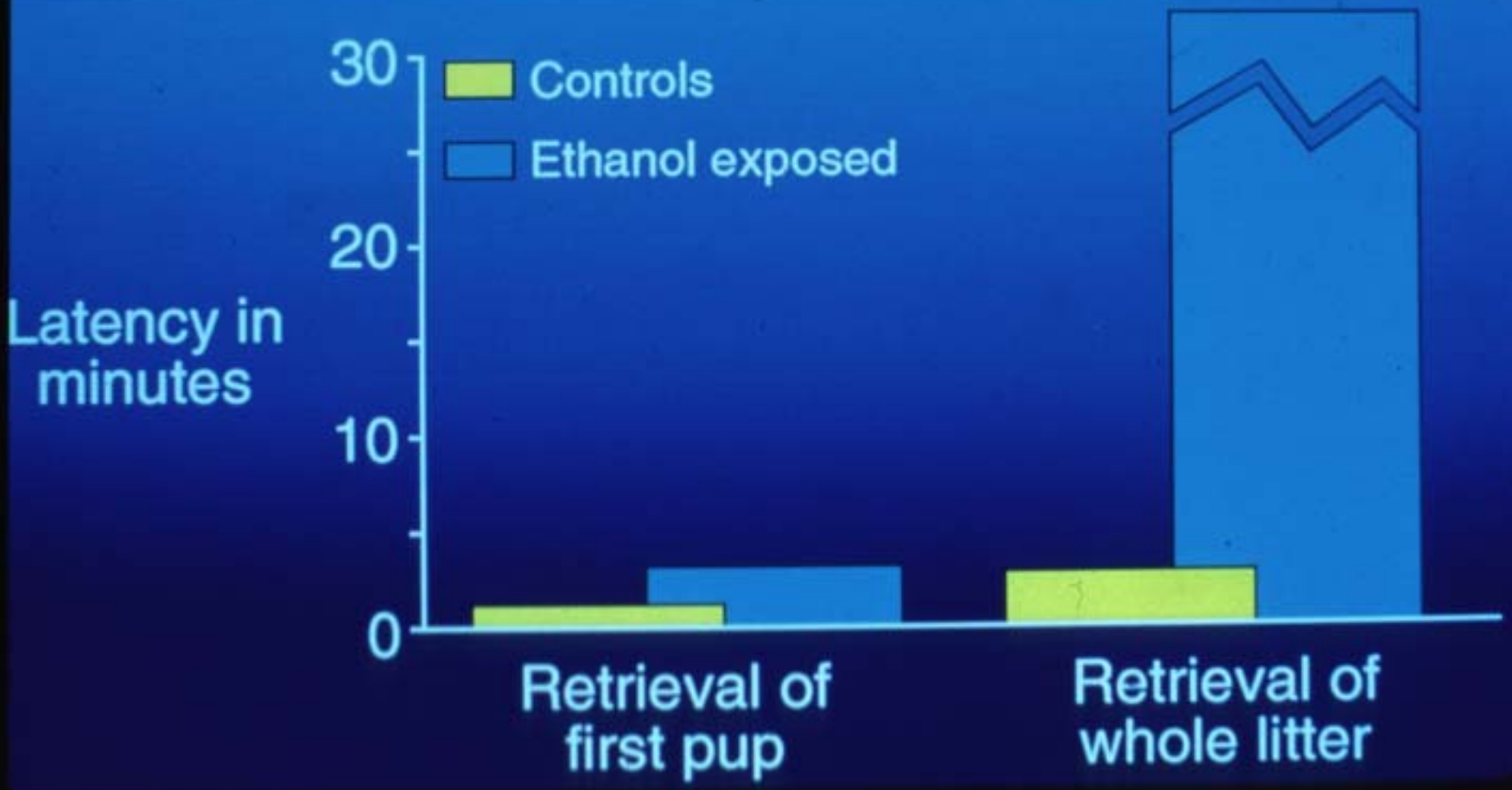
Humans	Animals
Hyperactivity, reactivity	Activity exploration, reactivity
Attn. deficits, distractibility	Decreased attention
Lack of inhibition	Inhibition deficits
Mental retard, learning diff.	Impaired associative learning
Reduced habituation	Impaired habituation
Perservation	Perservation
Feeding difficulties	Feeding difficulties
Gait abnormalities	Altered gait
Poor fine/gross motor skills	Poor coordination
Dev. delay (motor, soc., lang.)	Developmental delay
Hearing abnormalities	Altered audi. evoked potentials
Poor state regulation	Poor state regulation

Driscoll, Streissguth, Riley1990

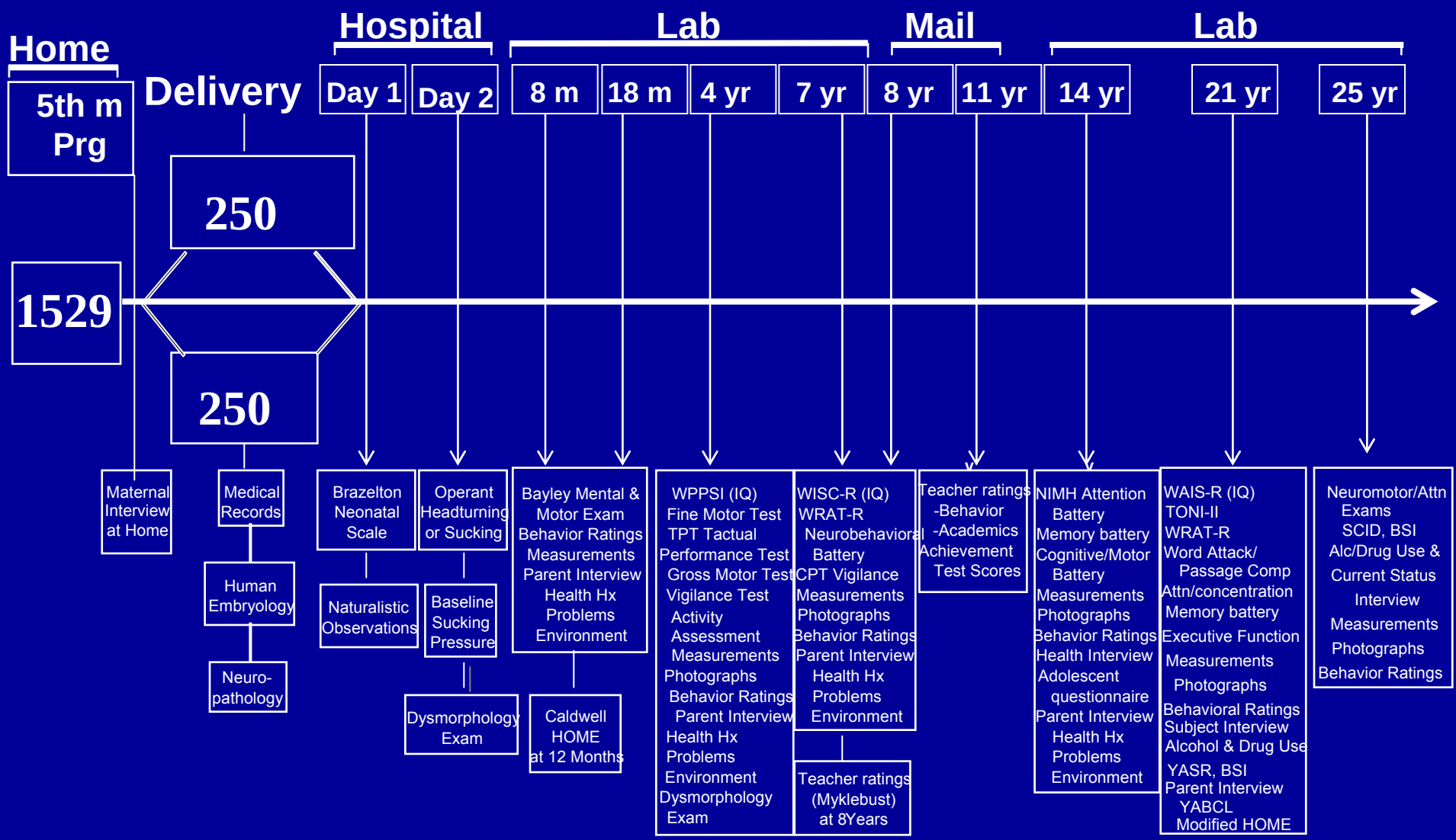
Alcohol Chicks Fail Detour Learning Test



Prenatal Alcohol Can Alter Pup Retrieval in FAE Mother Rats



STUDY DESIGN
SEATTLE LONGITUDINAL PROSPECTIVE STUDY ON ALCOHOL AND PREGNANCY
(prenatal through 30 years)



Day 1 or 2

Brazelton Exam, Reflexes, Pressure Transducer

Outcomes most salient for prenatal alcohol

Sucking Pressure …Poorer

Latency to Suck ….. Poorer

State Lability …… Poorer

Habituation: Light* ..Poorer

Reflexes …… Poorer

* Outcome most salient for prenatal alcohol across first 7 years of life.

Streissguth et al., 1993. The Enduring Effects of Prenatal Alcohol Exposure on Child Development. Ann Arbor, MI: U of Michigan Press

Summary: Birth cohort study

Prenatal alcohol effects are:

- Significant across life: Birth to 21 years
- Generally dose-dependant without clear thresholds
- Resistant to covariate adjustment
- Binge pattern particularly harmful

Neurobehavioral effects are:

- Stronger than physical
- Not mediated by birth weight

HOW DOES ALCOHOL CAUSE BRAIN DAMAGE?

ALCOHOL CAUSES:

- Excessive cell death
- Reduced cell proliferation
- Migrational errors in brain development
- Inhibition of nerve growth factor
- Disruption of neurotransmitters

SECONDARY DISABILITIES IN Fetal Alcohol Spectrum Disorders

RISK FACTORS

For Secondary Disabilities in FASD

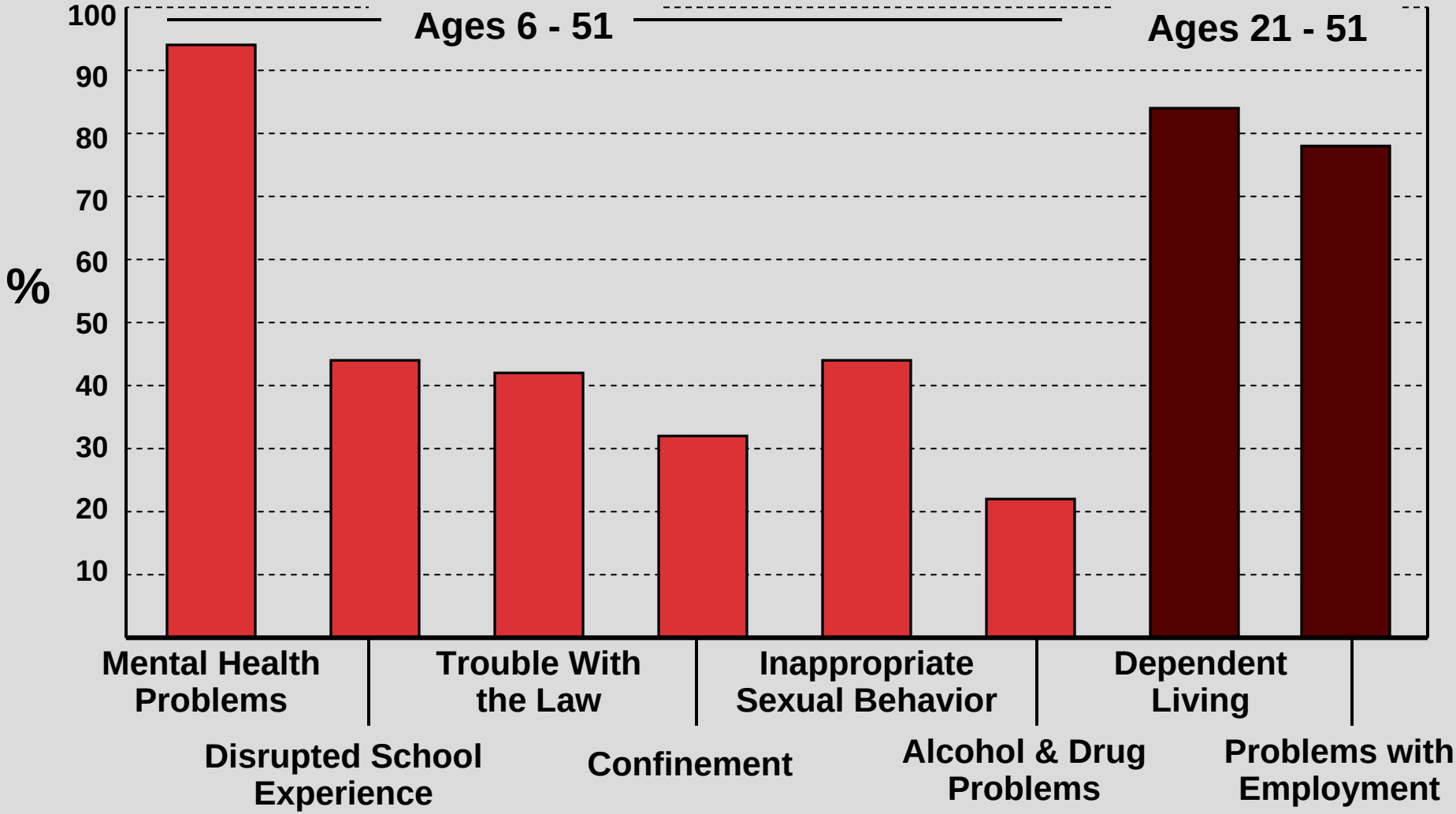
- **Not raised in a stable, nurturant home***
- **Not diagnosed at an early age***
- **72% experienced sexual or physical abuse**
- **Changing households every two to three years**
- **Not receiving Developmental Disabilities Services (All were born to mothers who abused alcohol)**

PROTECTIVE FACTORS

MULTIVARIATE ANALYSES SHOWED TWO STRONG PROTECTIVE FACTORS

- **Living in a stable & nurturant home**
- **Receiving an early diagnosis**

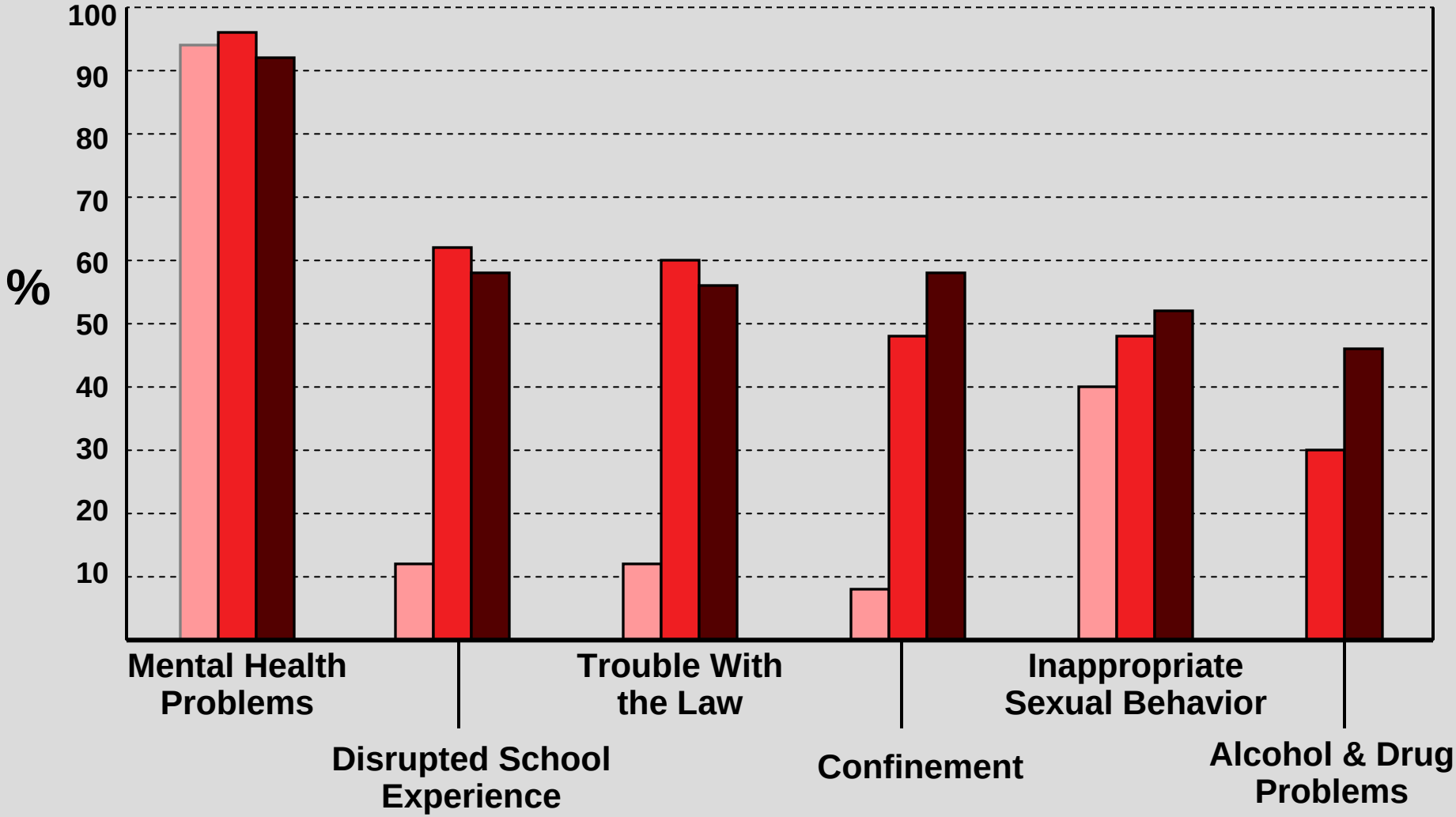
PREVALENCE OF SECONDARY DISABILITIES
Across the Life Span

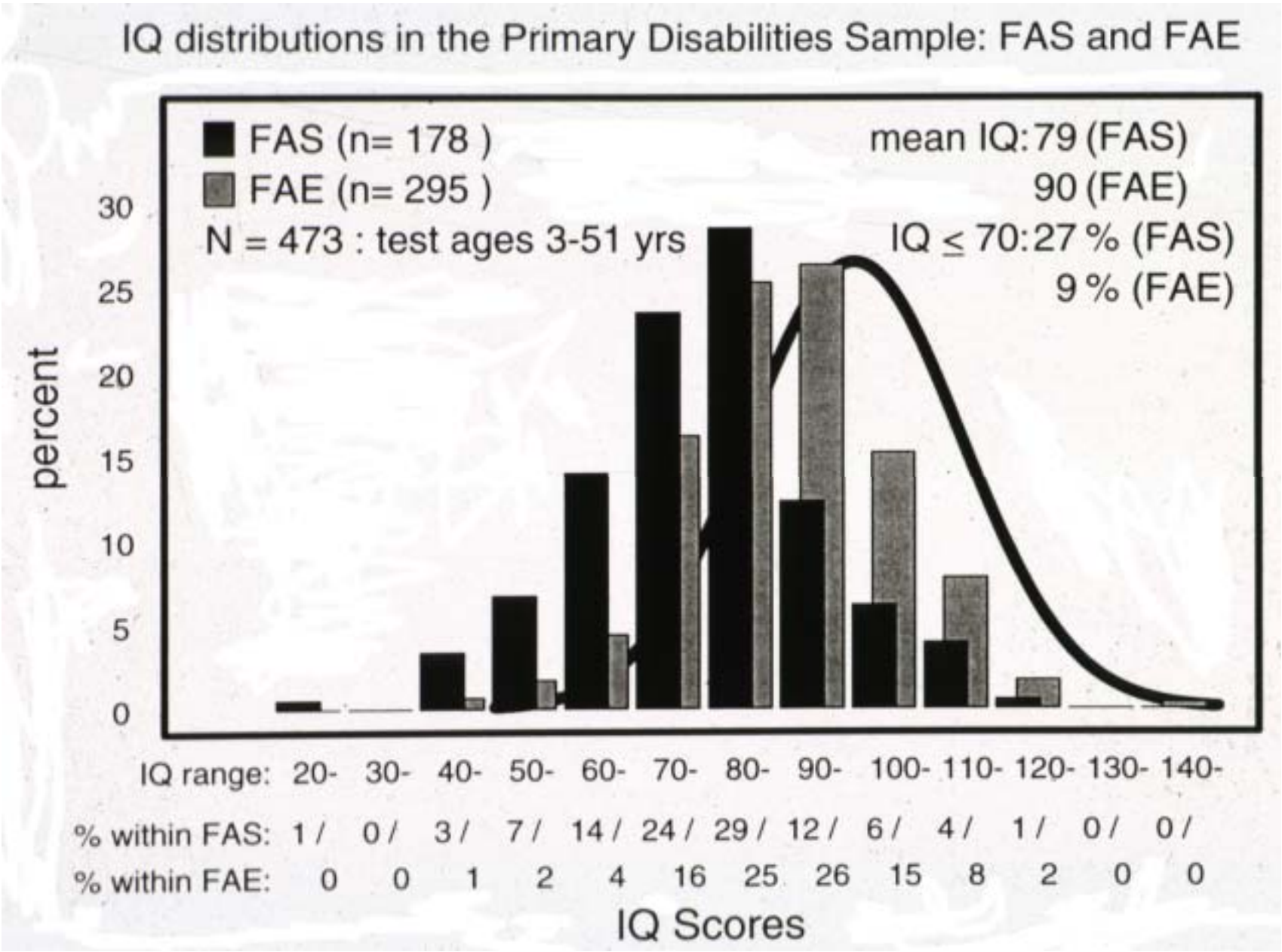


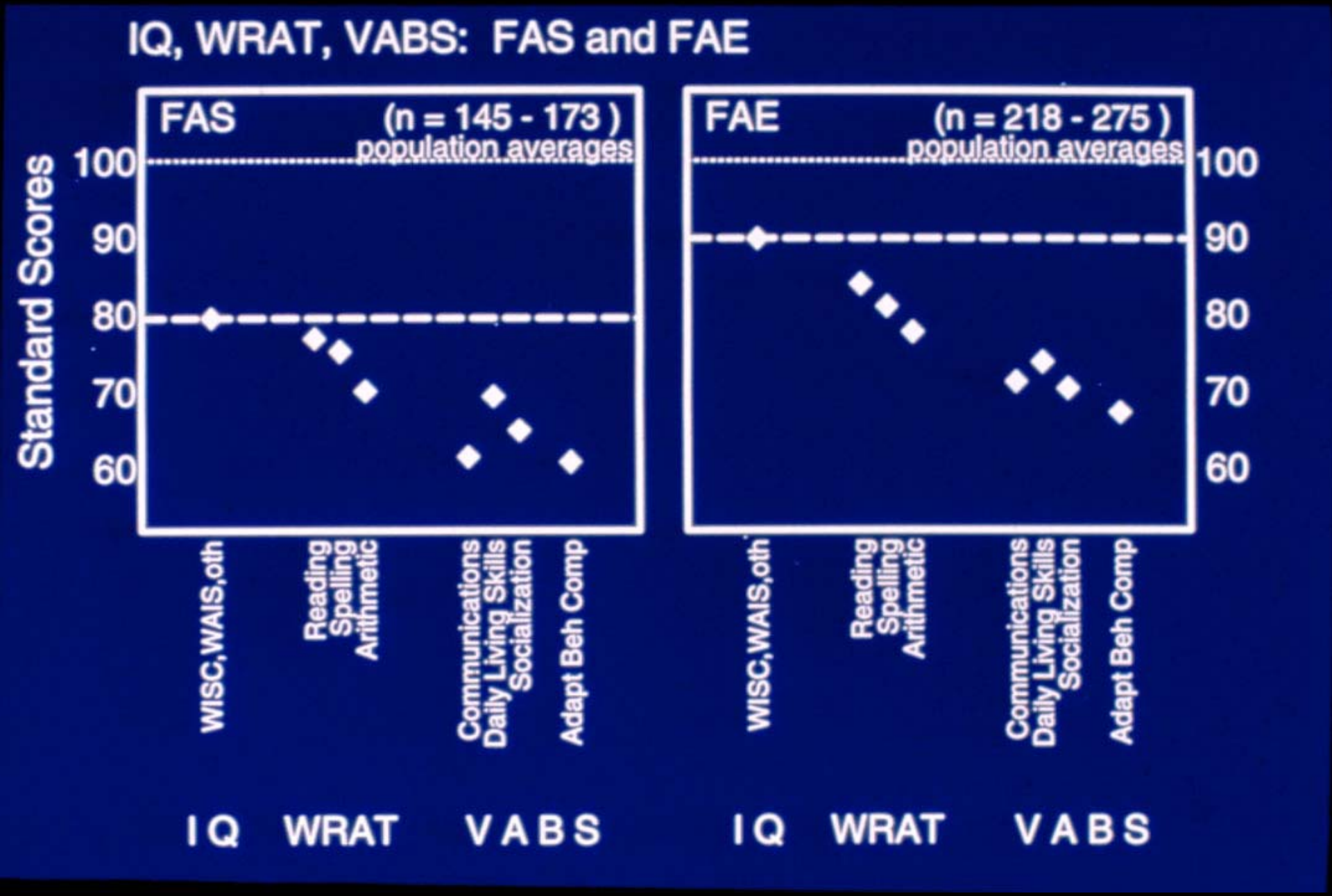
Ages 6-51 (n=408-415)

Ages 21-51 (n=89-90)

PREVALENCE OF SECONDARY DISABILITIES
by 3 Age Groups




IQ distributions in the Primary Disabilities Sample: FAS and FAE
FAS (n= 178)
FAE (n= 295)
N = 473 : test ages 3-51 yrs
mean IQ:79 (FAS)
90 (FAE)
IQ ≤ 70:27 % (FAS)
9 % (FAE)
percent
30
25
20
15
10
5
0
IQ range: 20- 30- 40- 50- 60- 70- 80- 90- 100- 110- 120- 130- 140-
% within FAS: 1 / 0 / 3 / 7 / 14 / 24 / 29 / 12 / 6 / 4 / 1 / 0 / 0 /
% within FAE: 0 0 1 2 4 16 25 26 15 8 2 0 0
IQ Scores

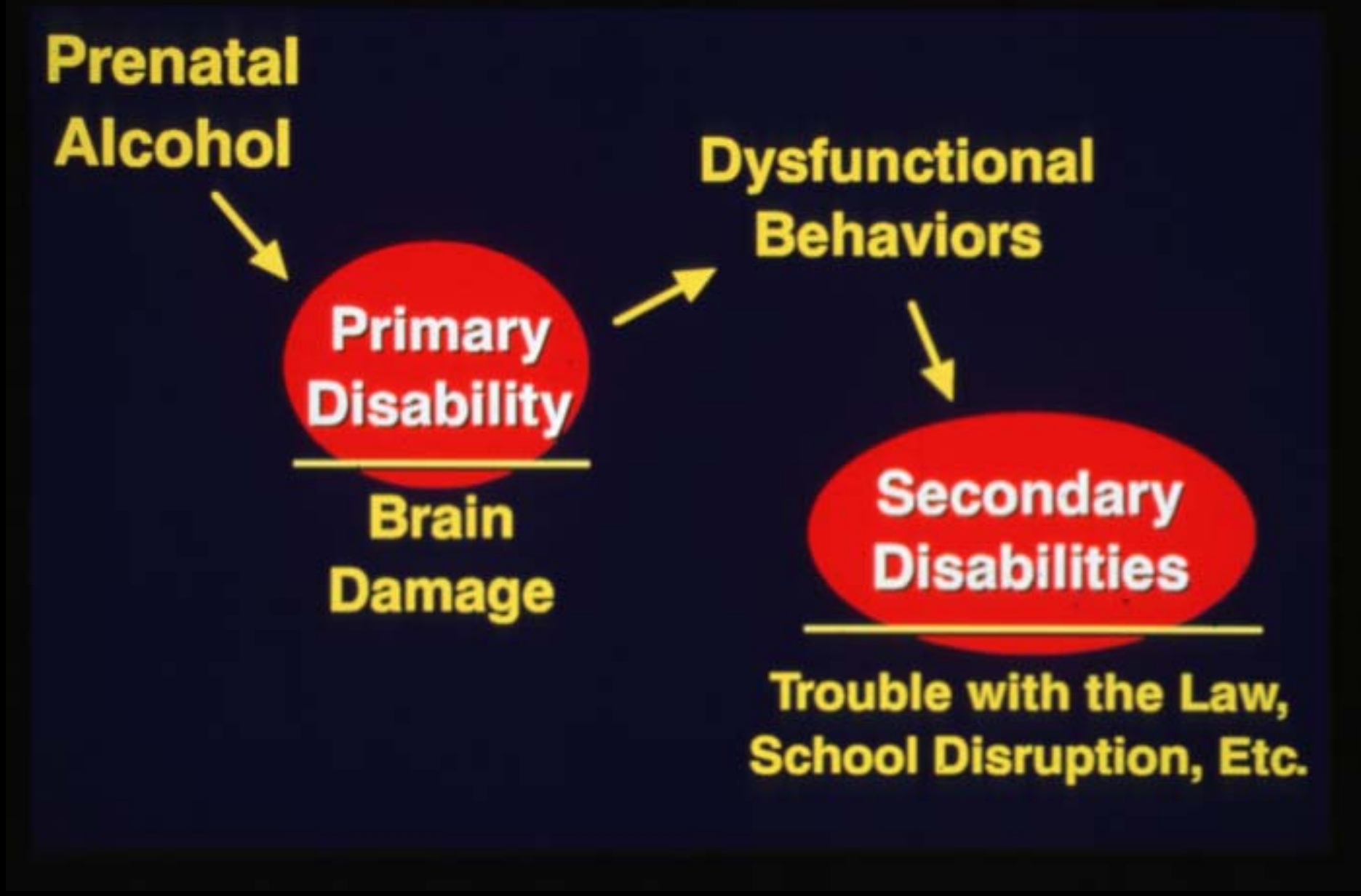

IQ, WRAT, VABS: FAS and FAE
FAS
(n = 145 - 173)
population averages
FAE
(n = 218 - 275)
population averages
Standard Scores
100
90
80
70
60
WISC,WAIS,oth
Reading
Spelling
Arithmetic
Communications
Daily Living Skills
Socialization
Adapt Beh Comp
IQ WRAT VABS
IQ WRAT VABS

FAS in Adolescents and Adults Clinical Implications

Poor judgment……	Easily victimized
Attention deficits……	Unfocused / distractible
Arithmetic disability…...	Can't handle money
Memory problems……..	Doesn't learn from experience
Difficulty abstracting….	Doesn't understand consequences
Disoriented in……. time and space	Fails to perceive social cues
Poor frustration ……. tolerance	Quick to anger

IF YOU HAVE A CLIENT LIKE THIS:

1. Ask if their mother had an alcohol problem?
2. Ask if they sometimes do the same dumb things over and over?
3. Ask if they have trouble managing money?
4. Give an informant the FABS
5. Help them get help.


Prenatal
Alcohol
Primary
Disability
Brain
Damage
Dysfunctional
Behaviors
Secondary
Disabilities
Trouble with the Law,
School Disruption, Etc.

DETECTION

Incidence of FAS:

≈ 3 per 1000 births

Prevalence of ARND:

> 6 per 1000 births

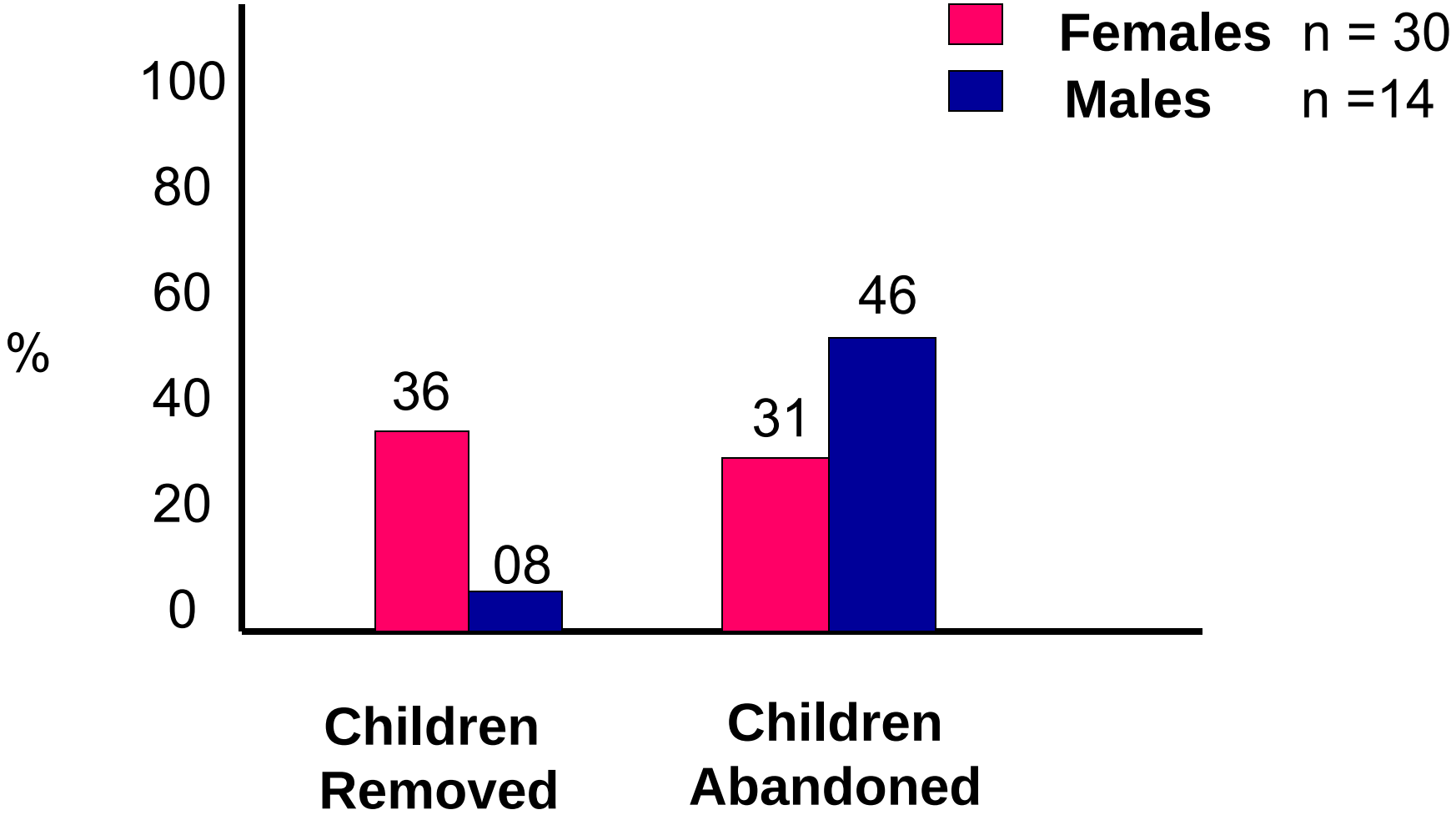
Prevalence of ARND + FAS:

≈ 1 per 100 births

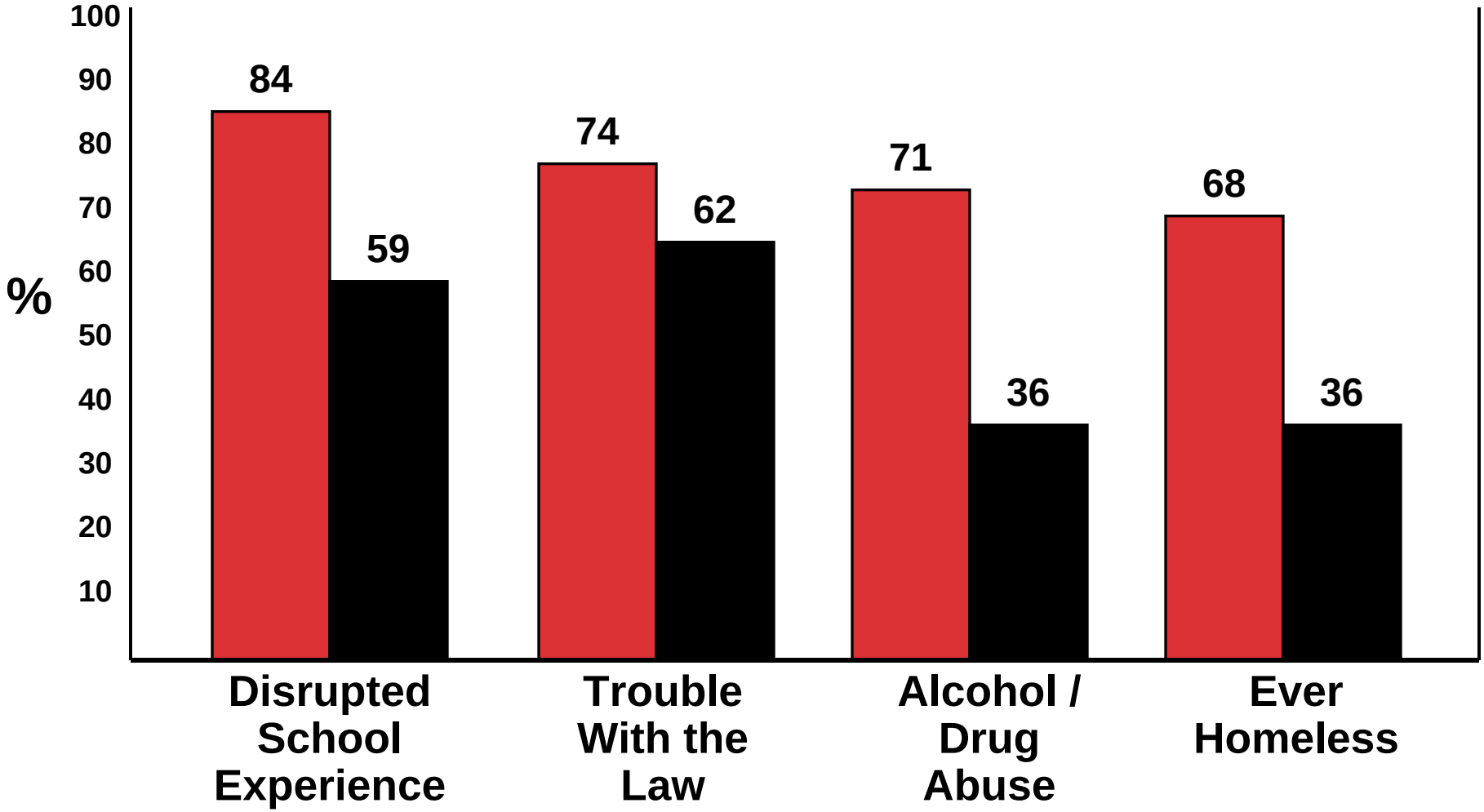
Seattle Longitudinal Prospective Study: Sampson, Streissguth, et al. Teratology, 1997

Patients with FAS / FAE who became Parents

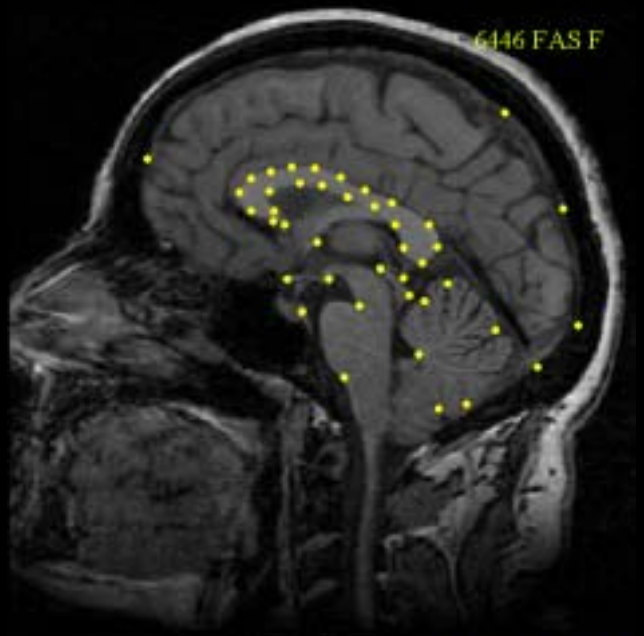
Reasons for failure to care for children

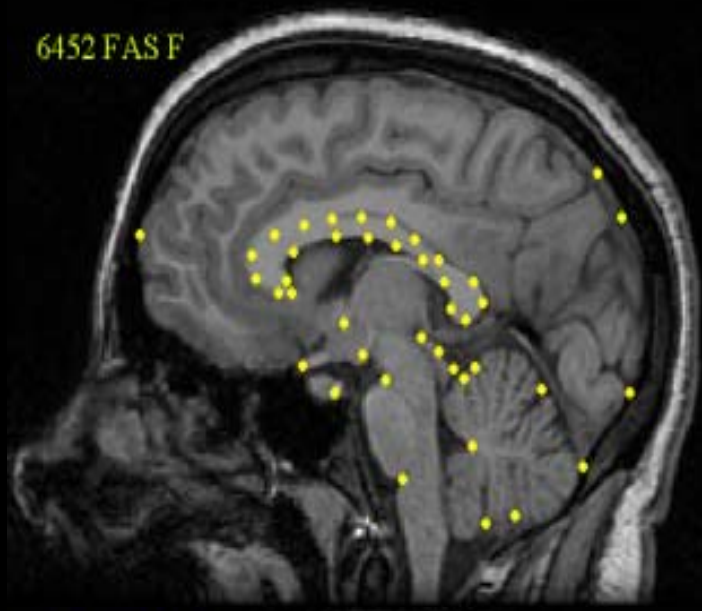


PREVALENCE OF SECONDARY DISABILITIES: Parents vs. Non-Parents

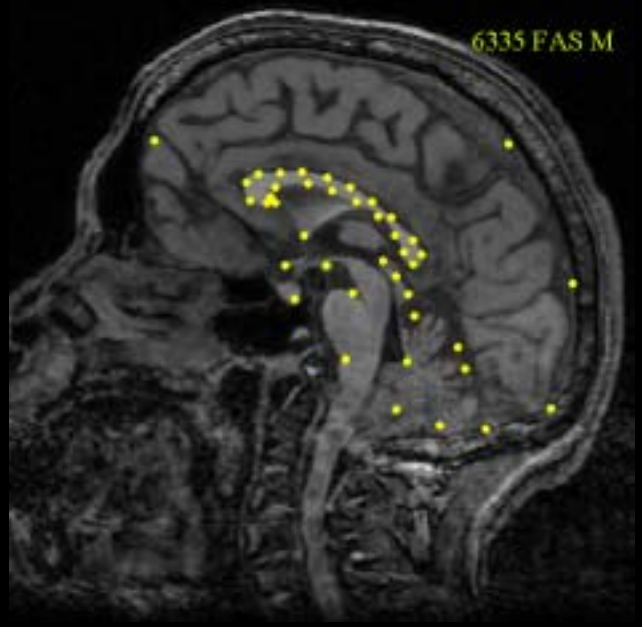


DETECTION

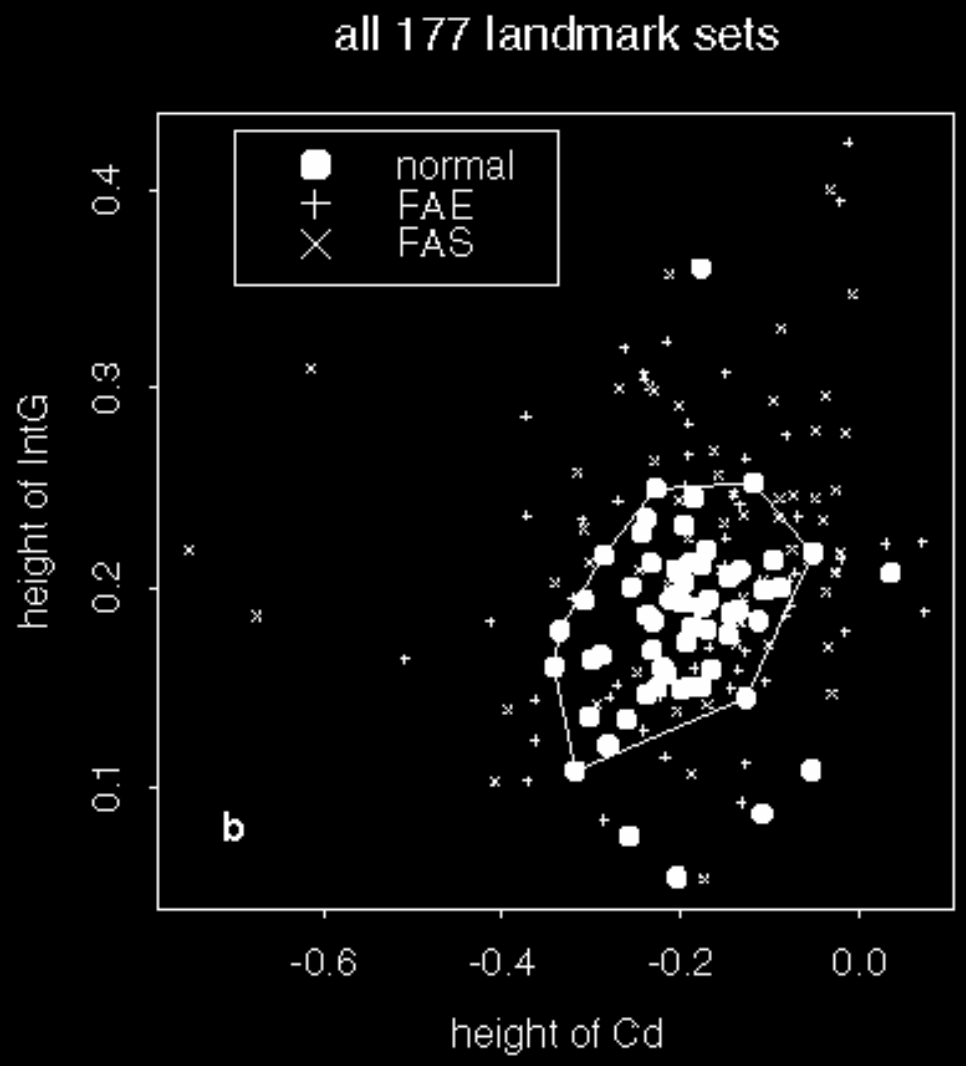


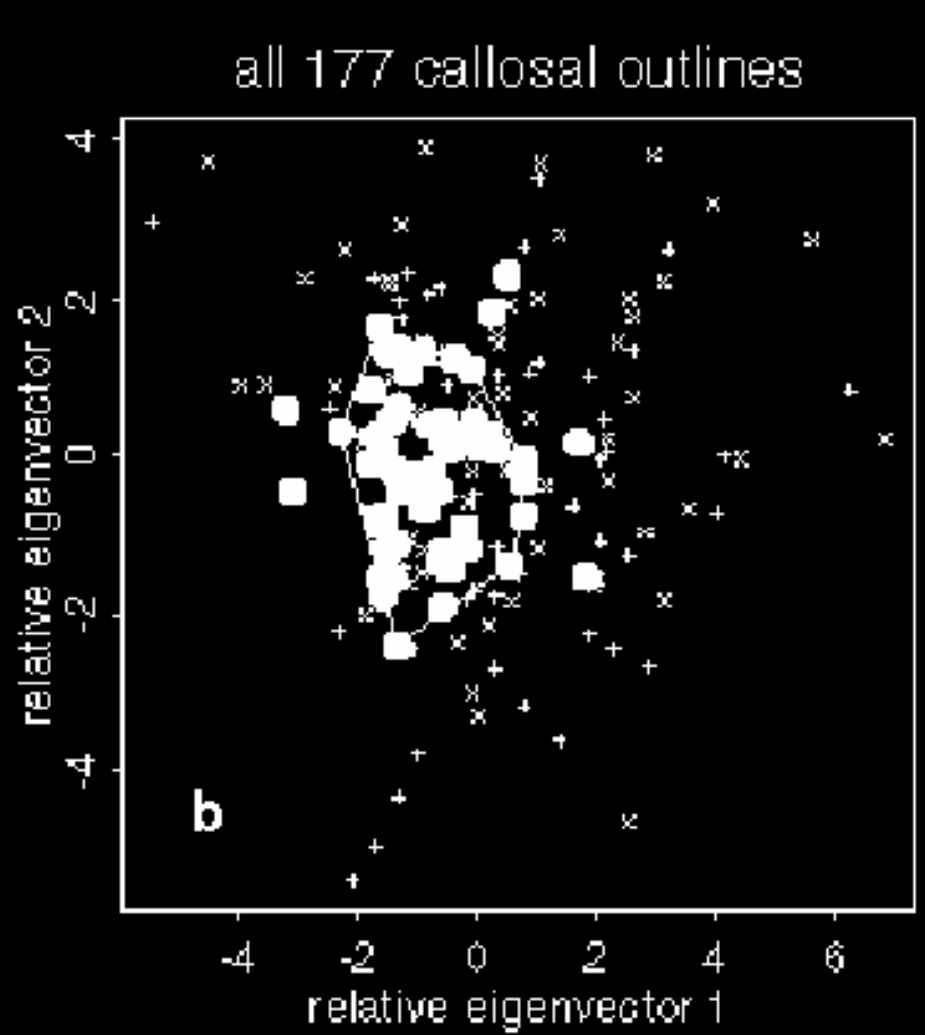


Midsagittal 4 FAS



Both landmarks and callosal outlines





show hypervariability of exposed compared to normals

Midline Corpus Callosum a Neuroanatomic Focus of Fetal Alcohol Damage *

100/117	(exposed detected)	= 85% sensitivity
49/60	(unexposed not detected)	= 82% specificity

FAS vs. FAE = indistinguishable

The finding is for HYPERVARIABILITY of SHAPE,
Not for mean size or volumes

* Bookstein, Sampson, Connor, Streissguth, 2002 *New Anatomist;* Bookstein et al, 2001 *Teratology*

Corpus Callosum Shape and Neuropsychological Deficits *

90 adult males : 30 FAS, 30 FAE, 30 unexposed

12 min MRI, 5 hr. test battery

Excess shape variation in exposed patients relates to:

Two different profiles of behavior

- Thinner CC with deficits in motor function
- Thicker CC with deficits in executive function

Bookstein, Streissguth, Sampson, Connor, Barr. 2002 *NeuroImage*

BEHAVIORAL PHENOTYPE: FASD

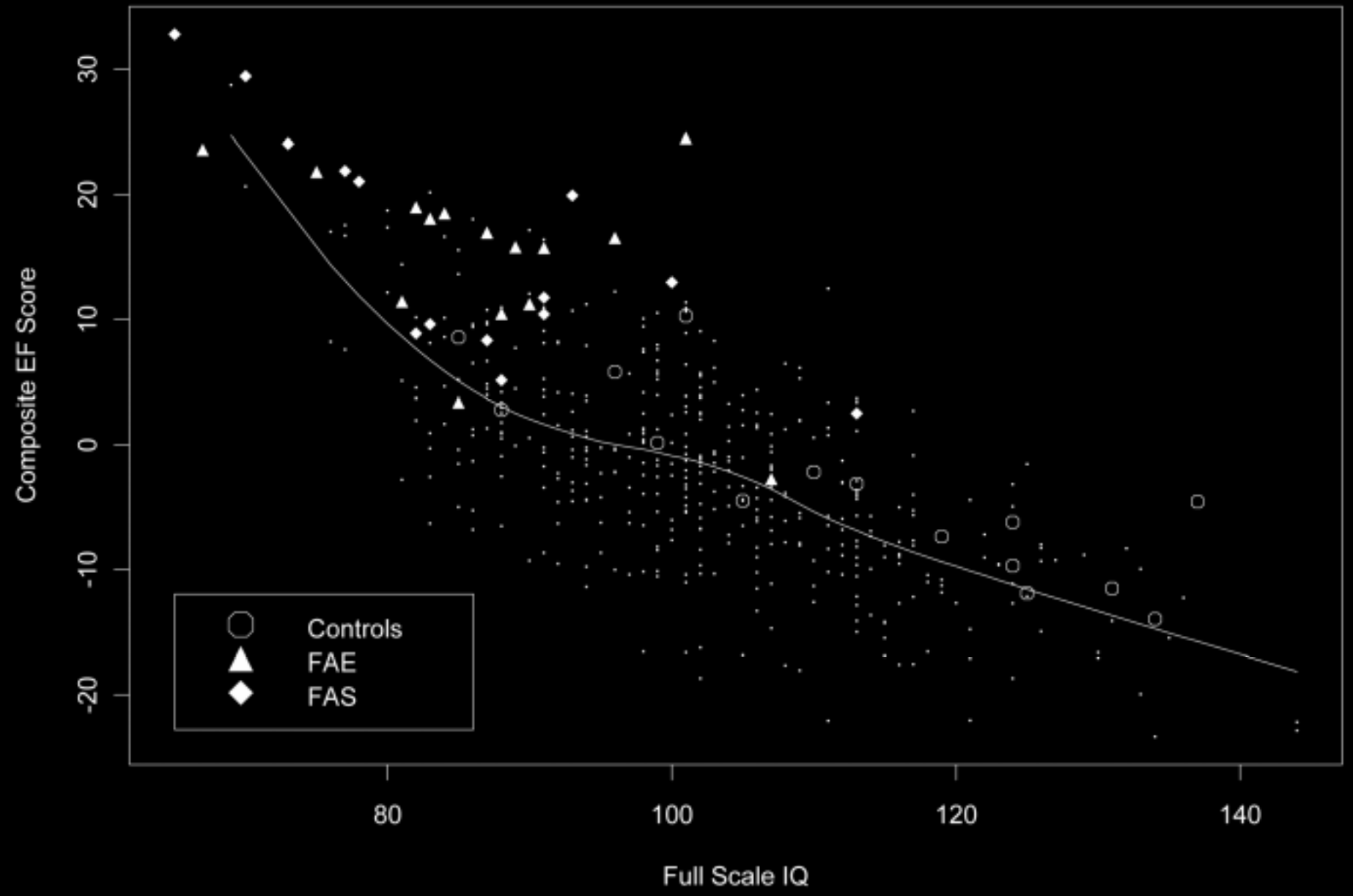
Poor EXECUTIVE FUNCTION*

1. Difficulty organizing stored information to plan future activities
2. Difficulty regulating and sequencing behavior
3. Difficulty inhibiting responses
4. Lack of cognitive flexibility

(Wisconsin Card Sort, Stroop, Trails, Ruff's Figural Fluency, Consonant Trigrams)

*Connor, Sampson,Bookstein, Barr & Streissguth 2000
Developmental Neuropsychology

More Executive Function Problems Than Expected for IQ Level in FAS/FAE



BEHAVIORAL PHENOTYPE: FASD

Poor Habituation: *
Difficulty Modulating Incoming Stimuli

1. Gets overstimulated in social situation (as in a crowded room, or among strangers)
2. Overreacts to situations with surprisingly strong emotional reactions
3. Displays rapid mood swings set off by seemingly small events
4. Has poor attention spans
5. Has trouble completing tasks

*Fetal Alcohol Behavioral Scale (FABS), parent report, Streissguth Book 1997

KEEP IN MIND:

Fetal Alcohol Spectrum Disorders are Birth Defects caused by prenatal alcohol,

and

Compounded postnatally by the consequences of a mother who abuses alcohol.

How can we detect and help families at risk in our own communities?

In Our Communities We Must:

- **Screen & detect high risk mothers, at pregnancy and delivery**
- **Be especially alert to mothers and babies with FASD**
- **Get both mothers and babies into early interventions**
- **Keep data on what happens**

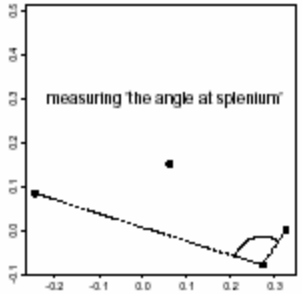
Best predictor of poor child & adult outcomes

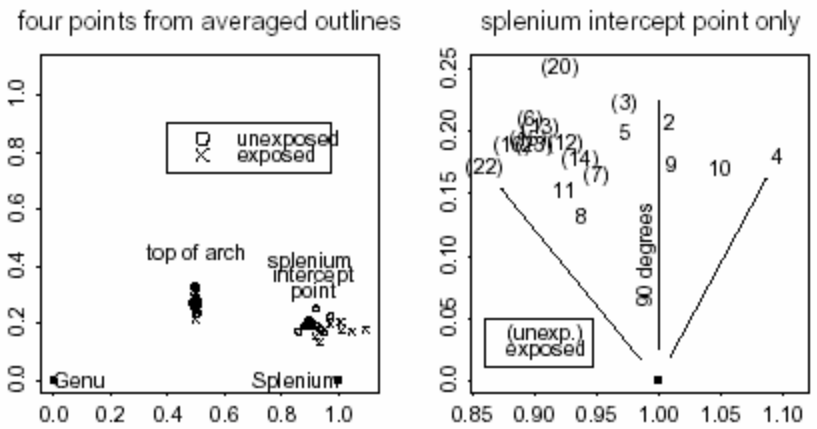
BARC *

Calculated from self-reported frequency of 4 - 5 or more drinks per drinking occasion

*Binge Alcohol Rating Criteria

Barr & Streissguth, 2001.


measuring the angle at splenium


four points from averaged outlines
unexposed
exposed
top of arch
splenium
intercept
point
Genu
Splenium
0.0
0.2
0.4
0.6
0.8
1.0
splenium intercept point only
(20)
(3)
5
2
(22)
(14)
(7)
9
10
4
11
8
90 degrees
(unexp.)
exposed
0.00
0.05
0.10
0.15
0.20
0.25
0.85
0.90
0.95
1.00
1.05
1.10

Fetal Alcohol Spectrum Disorders ARE NOT HOPELESS

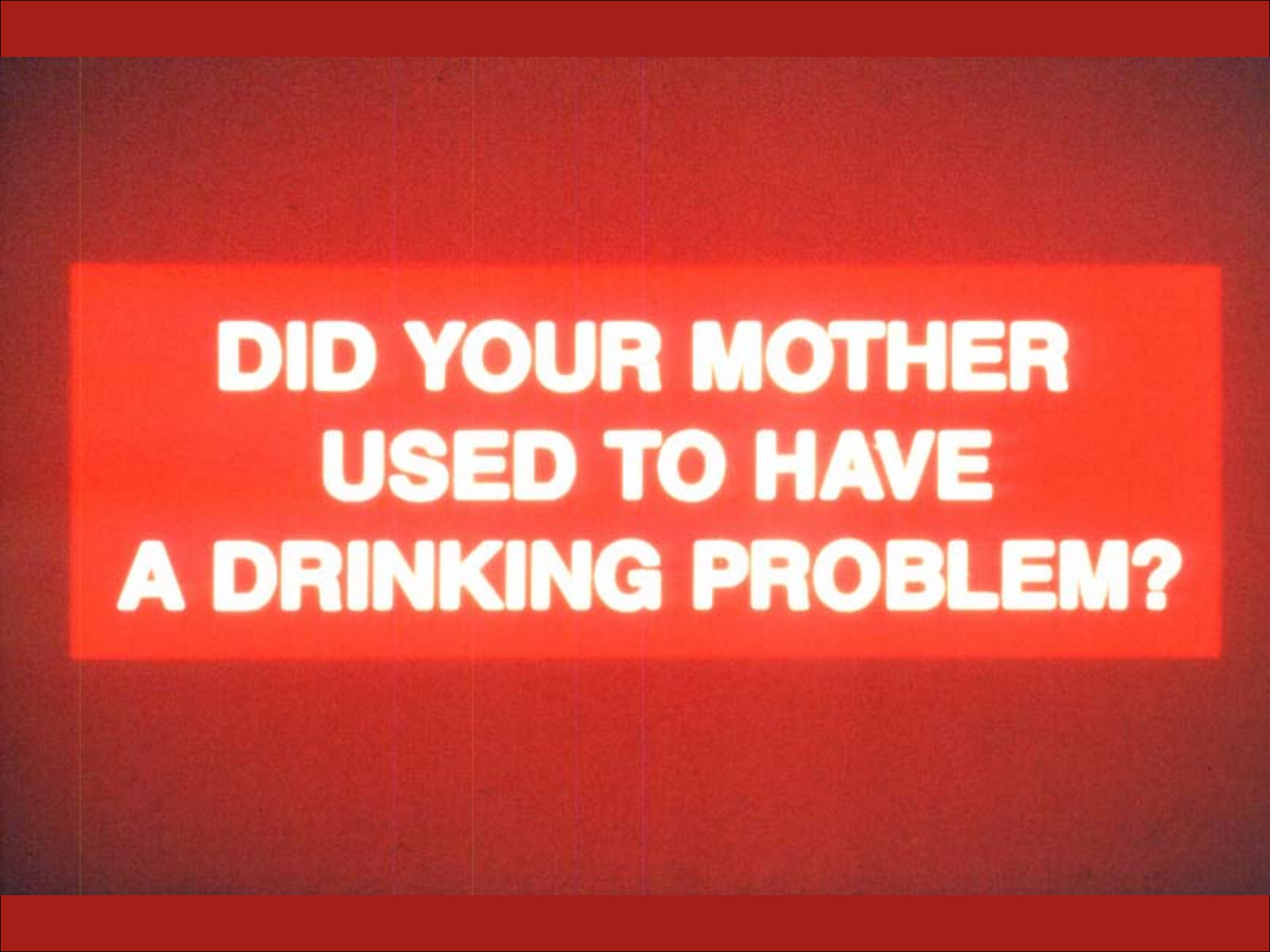
- An early Diagnosis
- Stable, Nurturant, Good Quality Home
- Freedom from Personal Violence
- Appropriate Institutional Supports

Can prevent secondary disabilities and enhance adult employment and independence

Recommendations for Institutional Detection of Patients with FAS/FAE

AT INTAKE

1. ASK about maternal alcohol abuse
2. LOOK at the patient
3. LEARN about the patient's past history


DID YOUR MOTHER
USED TO HAVE
A DRINKING PROBLEM?

FAS / FAE

Only 7 of 90 adults able to live independently and without major employment problems

WELLNESS FOR MOTHER/CHILD

1. Get an early diagnosis for babies
2. Get help for alcohol-abusing moms
3. Get babies into early intervention
4. Enlist family/peer support

WELLNESS FOR CAREGIVERS

1. Get a diagnosis if FASD suspected
2. Join an FASD support group
3. Get baby into early interventions
4. Get trainings from foster-care progrm
5. Help child be the best they can be
6. Watch child for developmental cues
7. Provide learning opportunities but avoid over-stimulating child w/ FASD

“IT IS IN THE SHELTER OF EACH OTHER THAT THE PEOPLE LIVE”

--IRISH PROVERB--