



Caring for Orphaned, Abandoned and Maltreated Children

Historical Considerations

- Although foster care increased throughout the 20th century, it took another 60 years for institutions to be largely abandoned in the U.S.
- Most orphanages in U.S. and United Kingdom had closed by 1970.
- They remain the most common form of care for orphaned and abandoned children in many parts of the world.
 - There are 100 million children living without available caregivers in Asia (65 million), Africa (34 million), and Latin America/Caribbean (8 million) alone (CWLA, 2003).

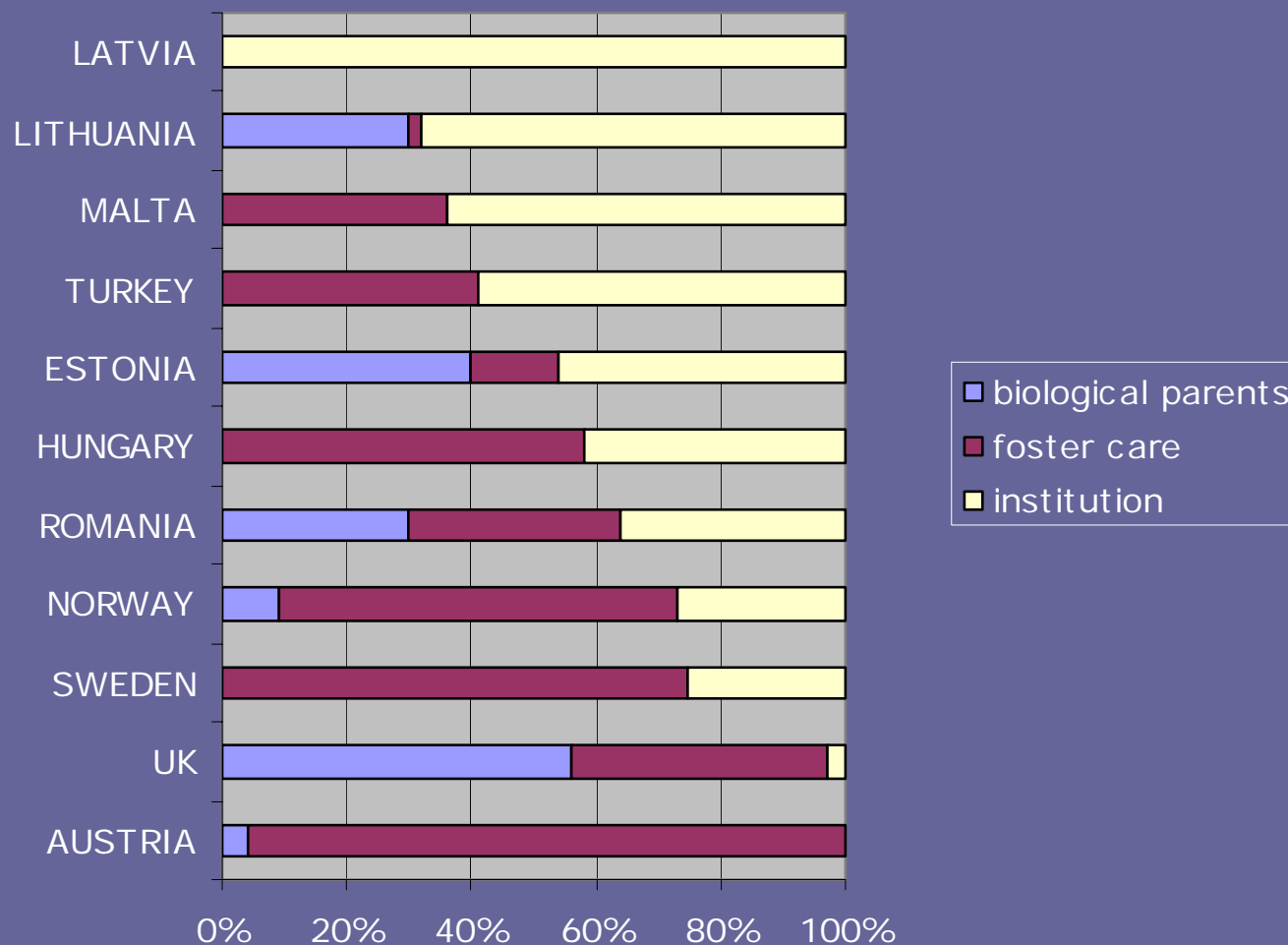
Placements of under 3s in institutions

* refers to estimates, () denotes parent may be with child, Browne et al. (2006)

Country 2003	Proportion per 10,000	No u3 in institutions	Country 2003	Proportion per 10,000	No u3 in institutions
Czech Rep.	60	1,630	Italy	14	(*2,269)
Belgium*	56	*2,164	Poland	9	*1,344
Bulgaria	50	1,238	Croatia	8	144
Lithuania	46	458	Albania	8	*133
Latvia	42	395	Sweden	8	(*213)
Romania	33	2,915	Denmark	7	133
Slovak Rep.	31	502	Ireland	6	*95
Finland	28	(*466)	Cyprus	4	*15
France	27	*6,143	Austria*	3	*37
Malta	27	44	Greece	3	114
Estonia	26	100	Turkey	2	850
Hungary	24	927	Norway	1	19
Spain	23	*2,471	UK*	<1	(*65)
Portugal	16	714	Slovenia	0	0
Netherlands	16	1,284			

Placement of children under 3 taken into care, 2002-2003

Browne et al. (2006)



Institutional Care in the United States

- Institutions, which had almost disappeared as a form of care for young maltreated children, reappeared in large urban areas in late 1980's related to cocaine epidemic and young children removed at birth.
- Numbers of infants overwhelmed foster care systems, especially in large urban areas.
- Some religious groups have never given up institutions and continue to advocate for them.

Percentage of children in care who are in institutions in 2001 (U.S.)

	< 1 yr	1-2 yrs	2-3 yrs	3-4 yrs	4-5 yrs
Connecticut	4.5%	5.4%	8.2%	11.6%	13.0%
Delaware	0.0%	0.0%	0.0%	0.0%	0.0%
District of Columbia	41.9%	23.1%	14.7%	16.2%	14.9%
Texas	5.3%	4.9%	5.5%	5.7%	6.7%
Georgia	6.4%	2.9%	1.4%	0.8%	1.6%
Kentucky	7.6%	5.9%	6.4%	5.9%	10.3%
Louisiana	1.4%	0.0%	0.8%	0.0%	1.0%
Puerto Rico	16.5%	12.2%	8.3%	7.5%	7.0%
Total	2.7%	1.6%	1.4%	1.4%	1.6%



The question....

What is the evidence that foster care is better than institutional care for young children?

Evidence favoring foster care

- 50 years of studies comparing children in foster care to children in institutions, all of which finds children in foster care developing more favorably
- Children adopted out of institutions into families make dramatic developmental gains
- Problem of selection factors
- BEIP

Should institutions be abandoned as a form of care for young children?

Pre-institutional care

AIDS/Genocide Orphans in Rwanda

Support for child headed households through mentors.

Boris et al, 2006

In some developing countries, institutions may not yet exist and other interventions are necessary

Institutional care

Abandoned Romanian Children

Reduced numbers of caregivers and/or enhanced sensitivity

Smyke et al., 2002
Jones Harden, 2002

If institutional care must be used, small family-like group settings; short stays; more individualized care; enhance foster care alternatives

Foster Care

Maltreated children in U.S.

Manualized treatments that have reduced problems are available

Dozier et al., xxxx
Fisher et al., 2005

If foster care is widely used, move towards models backed by evidence of their effectiveness compared to "business as usual"



The Bucharest Early Intervention Project

PIs and Collaborators*

- Charles Zeanah and Anna Smyke (Tulane University)
- Nathan Fox (University of Maryland)
- Sebastian Koga (University of Virginia)
- Dana Johnson (University of Minnesota)
- Peter Marshall (Temple University)
- **Charles A. Nelson** (Harvard Medical School)
- *Subproject investigators include Megan Gunnar, Helen Link Egger, Jennifer Windsor

The Bucharest Early Intervention Project (BEIP) seeks to:

- Examine the effects of institutionalization on the brain and behavioral development of young children
- Determine if these effects can be remediated through intervention, in this case: foster care
- Improve the welfare of children in Romania by establishing foster care as an alternative to institutionalization



Project Background

The Results of Ceausescu's 1966 Policy

- Child abandonment became a national disaster, as families could not afford to keep their children, and were encouraged to turn them over to the state.
- This destroyed the family unit and led to >100,000 children being raised in institutions.

Romania today

- At least 30,000 children remain in institutions as of 2006...although thousands of children continue to be abandoned every year.
- Moratorium on international adoption and it remains difficult to adopt domestically.

Sequelae of Institutionalization

- Children raised in institutions are at dramatically increased risk for a variety of social and behavioral abnormalities, including:
 - Disturbances and delays in social/emotional development
 - Aggressive behavior problems
 - Inattention/hyperactivity
 - Syndrome that mimics autism^{*}
- Developmental problems believed to result from deprivation inherent in institutional care

*

...which disappears once a child is adopted



The Bucharest Early Intervention Project

Background

Sample of Institutionalized children initially selected from 187 that were screened by pediatrician; thus, no Fetal Alcohol Syndrome, frank neurological or chromosome disorders. 51 screened from study.

Study Design

- The BEIP is the first ever randomized trial of foster care as intervention for social deprivation associated with institutionalization
 - 136 institutionalized children between 6 and 31 months initially assessed at baseline (Mean Age=20 months)
 - 68 randomly assigned to remain in institution (IG)
 - 68 randomly assigned to foster care (FCG)
 - 72 never-institutionalized children (NIG) matched on age and gender serve as controls

Foster Care Program

- Advertised for FC parents; then screened
- Identified 56 diverse foster families:
 - 63% had vocational training, specialized skills, or completed college
 - 27% Retired
 - 5% Never employed before
 - 46% Single parent families
- Based on French model—foster parents paid salaries as full-time employees rather than receiving child subsidies
- No young children attended childcare outside of the home

Support for Foster Parents and Foster Children

Immediately after placement

- Frequent visits and phone contact
- Specific questions regarding child behavior and development
- “Normalize” post-institutional behavior

Longer Term

- Foster parent support group
- Group and individualized interventions

Our foster care was unique and very high quality

Early months of the project

- Frequent initial visits to Romania
- Weekly videophone calls
- Building trust
- Cultural differences
 - Team vs. hierarchy
- Educational materials from US
 - Books on topics discussed in weekly phone call
 - Domestic violence
 - Child development
 - Picture books

Longer Term Support

- Quarterly visits
- Continued video/phone contact
- Addressing more complex issues
 - Foster parents' early experiences and impact on relationship with child
- Introduce developmental interventions
- Process foster parent/foster child response to intervention
- "Caring for the carers" (social workers and Foster parents)

The Study

Children assessed at:

- Baseline (Mean age = 22 months)
- 9 months
- 30 months
- 42 months
- 54 months (limited)
- 8 year follow up currently planned

Domains of Assessment

- Physical Development
- Language
- Social Functioning/Social-Emotional Development
- Carefully characterize caregiving Environment
- Cognition
- Temperament
- Attachment
- Brain Function
- Mental Health Problems

Ethical Considerations

- We were invited to conduct this study by Minister of Child Protection.
- Random assignment was possible because there was effectively no foster care in Bucharest when we started and we thus had to build our own
- The foster care we created is of very high quality
- No child placed in foster care would ever be returned to the institution
- Any institutionalized child who had the opportunity to be placed in state-run foster care or reunited with their bio family would be

General Hypothesis

- Deficits and developmental delays that result from institutional rearing have their origins in compromised brain development. Mechanism?
 - For the brain to wire correctly, it needs input; the lack of input leads to under-specification of circuits and miswiring of circuits
 - Children living in institutions lack input (stimulation) on a grand scale; thus, expect such children to experience a range of problems due to “errors” in brain development
- Some domains of function are more experience-dependent than others
- For those that are experience-dependent, the timing of experience will vary by domain (e.g., cognition, attachment, etc.). Thus...
- The efficacy of foster care will vary by domain and duration

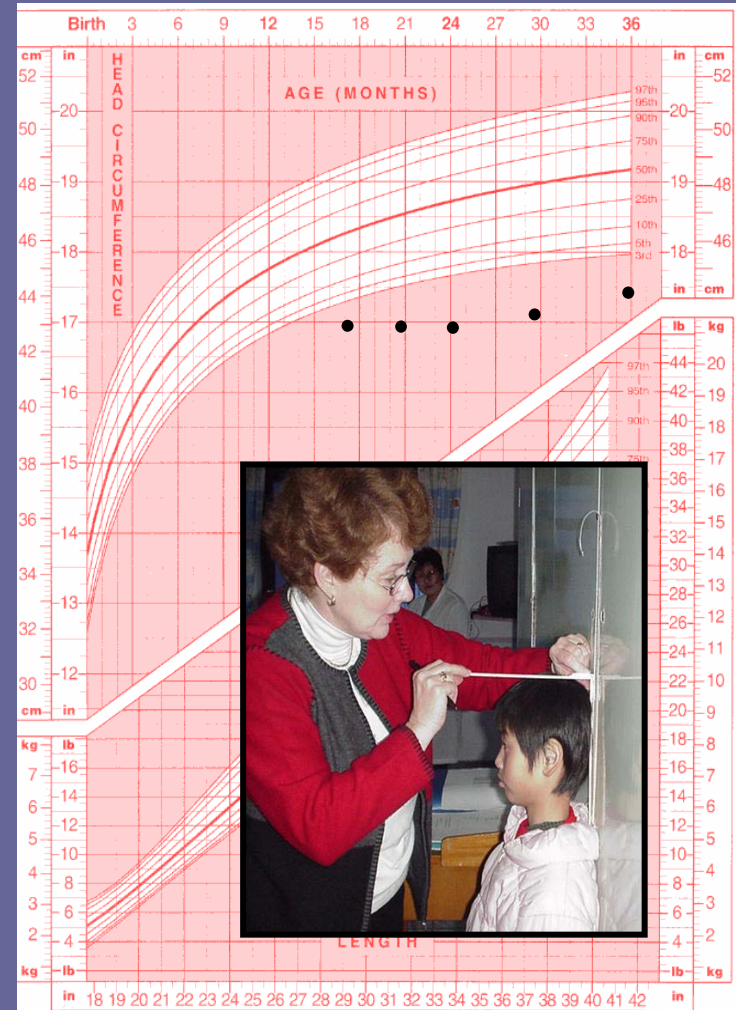
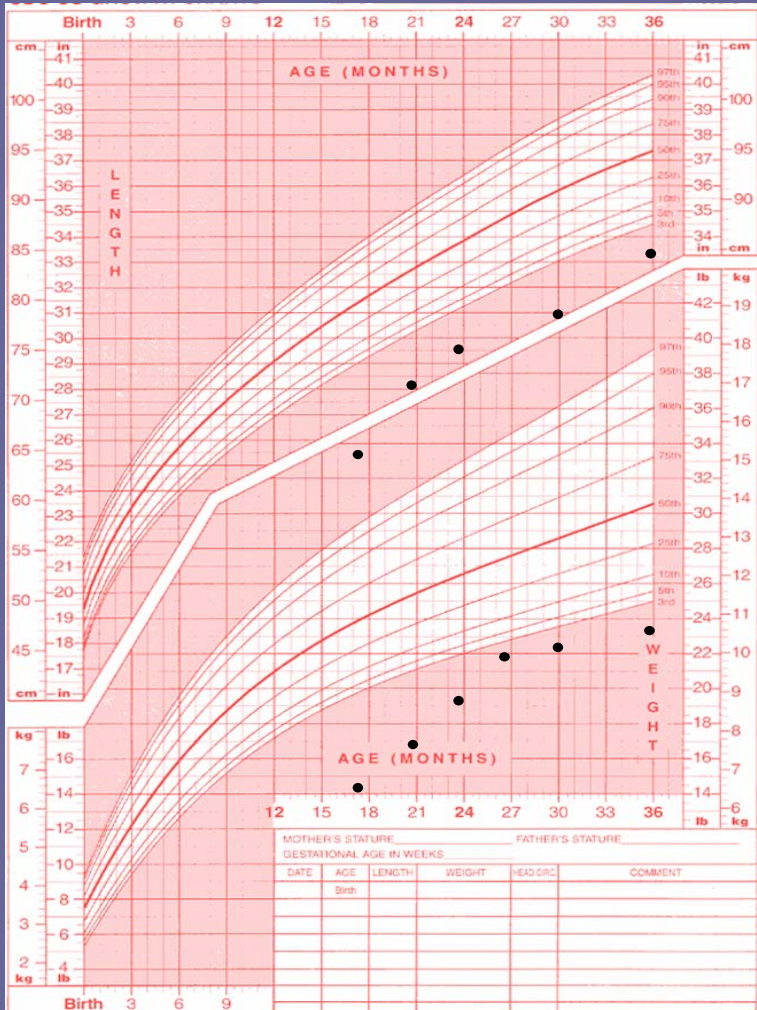


Growth in the Bucharest Early Intervention Project

Growth in Institutionalized Children

- Analyzing growth in children.
- Patterns of growth failure in institutionalized (abused or neglected) children.
- What does BEIP tell us about growth and child well-being?

Analyzing Growth in Children



History: Relinquished by her mother at 17 months because of economic reasons

Why Use Z-Scores??

a.k.a. Standard Scores

- **Percentiles** are useful indicators of an individual child's status but a fixed percentile interval does not correspond to a constant change in weight or height at all points in the distribution.

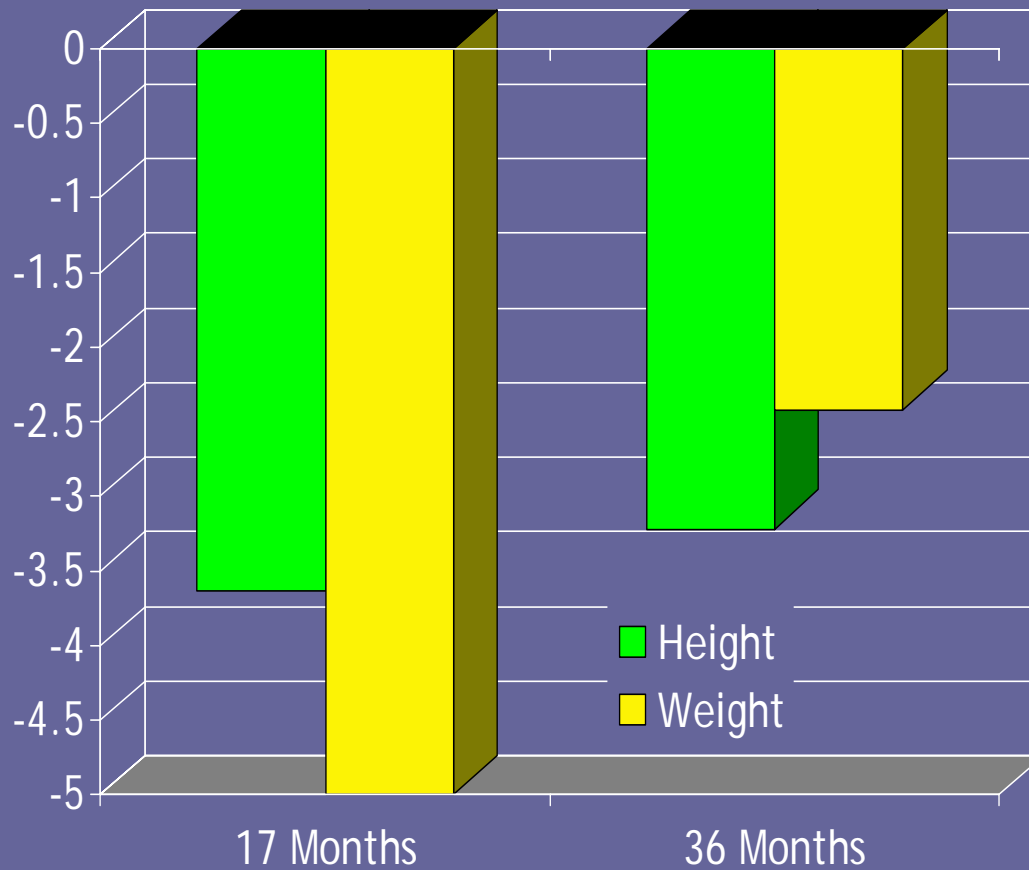
Percentile Interval	Height cm
10th-20th	2.5
40th-50th	1.5
70th-80th	1.8

**9 Year-Old
Girls**

Z-Score Interval	Height cm
+2 to +3	5.7
0 to +1	5.7
-2 to -3	5.7

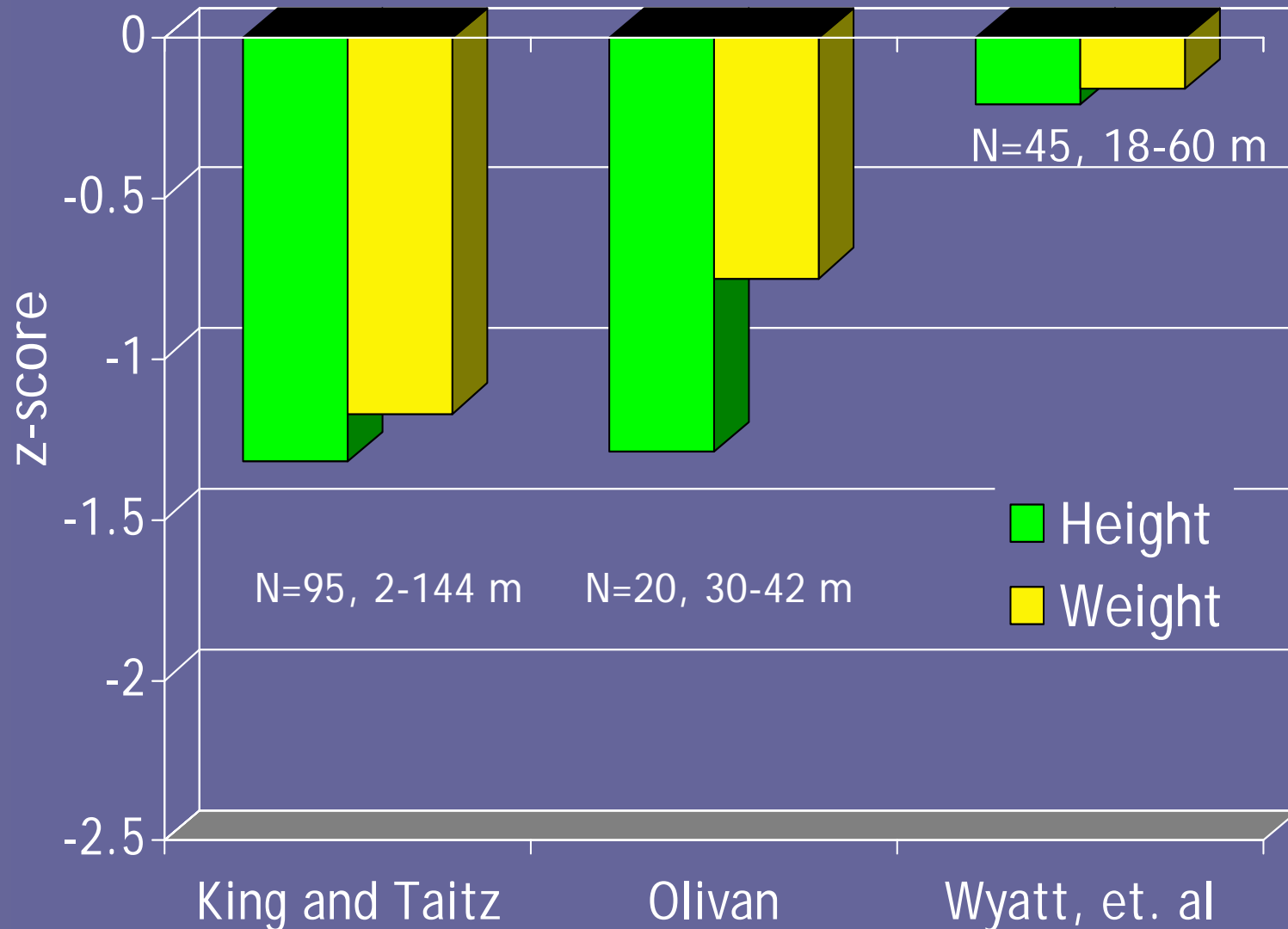
- A **z-score** interval is a fixed difference in absolute weight or height across the entire distribution of children that are the same age. The mean and standard deviation can be computed for a group of z-scores, but not for percentiles.

Z-Scores (Standard Deviation Scores)

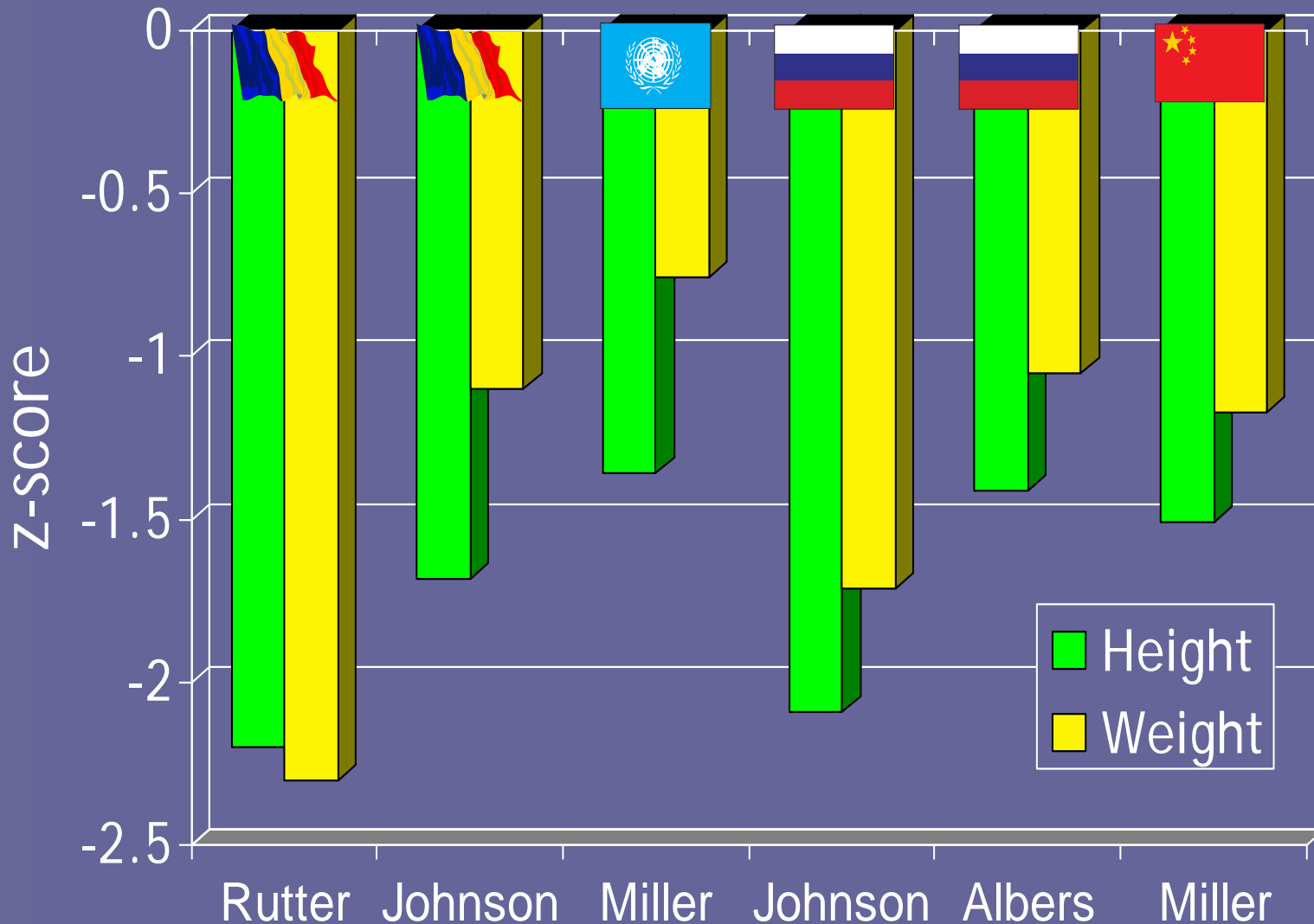


$$\text{Z-Score} = \frac{\text{Mean} - \text{Measure}}{\text{S.D.}}$$

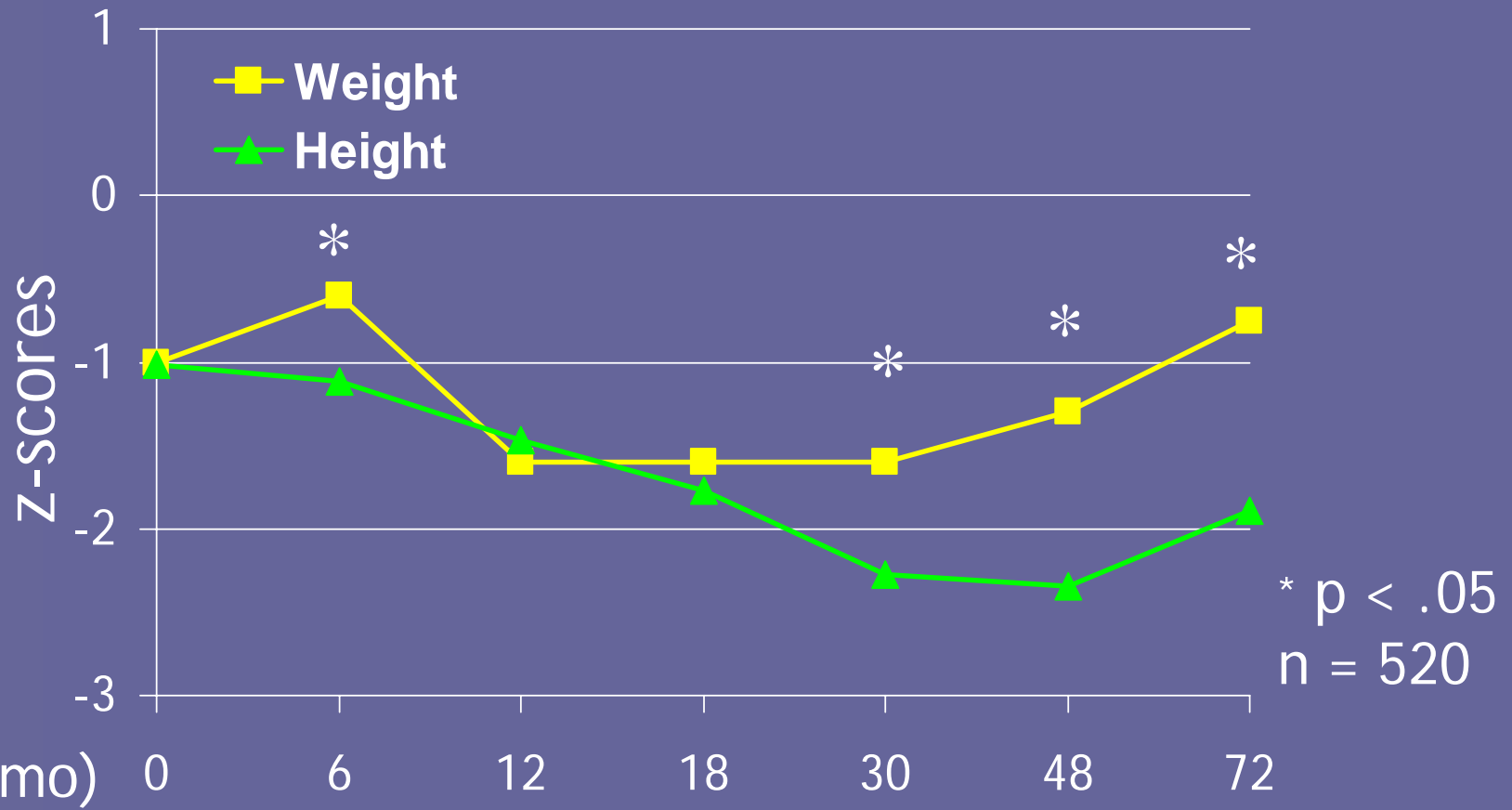
Growth Failure in Abused Children



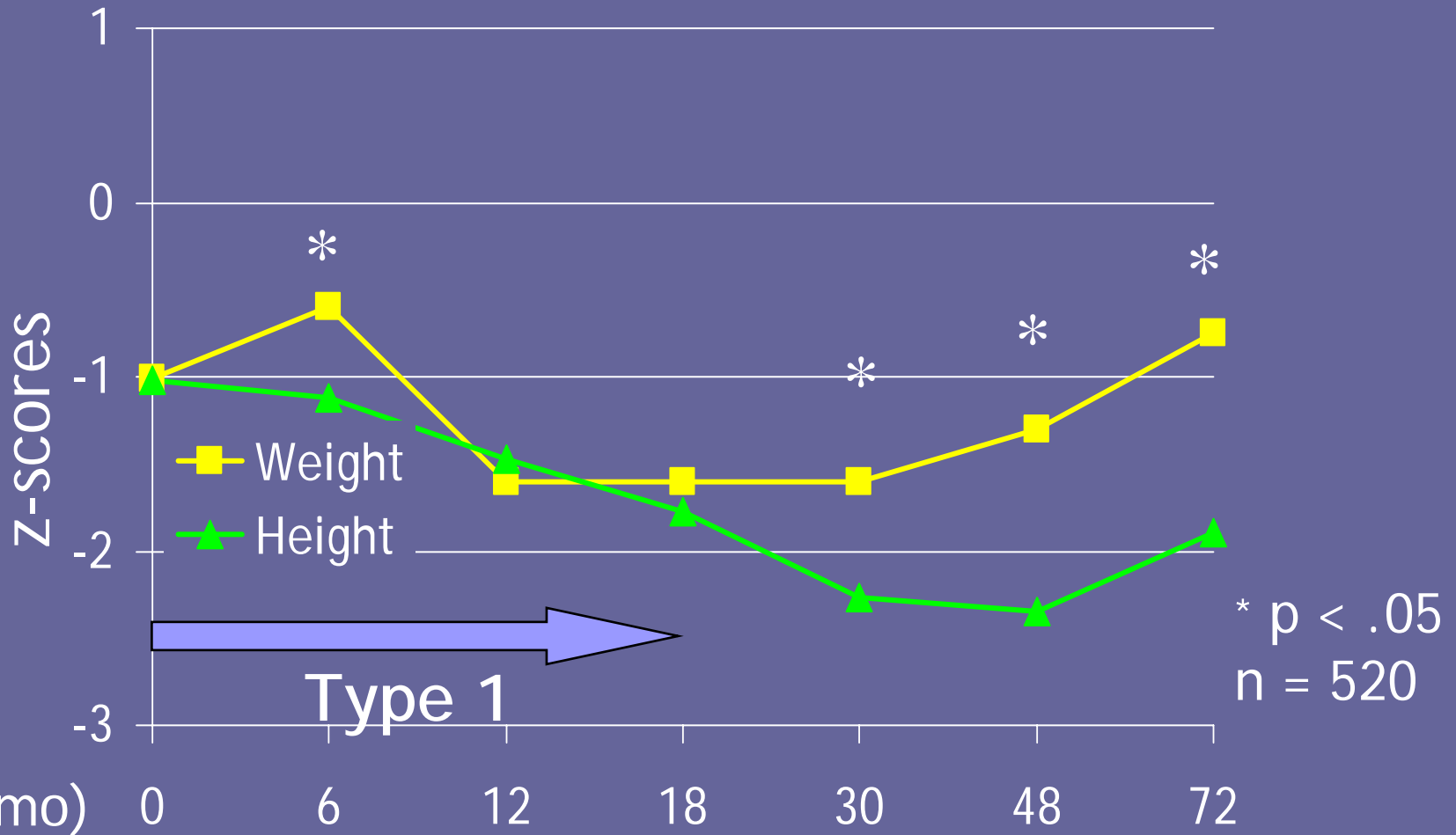
Growth Failure in Institutionalized Children



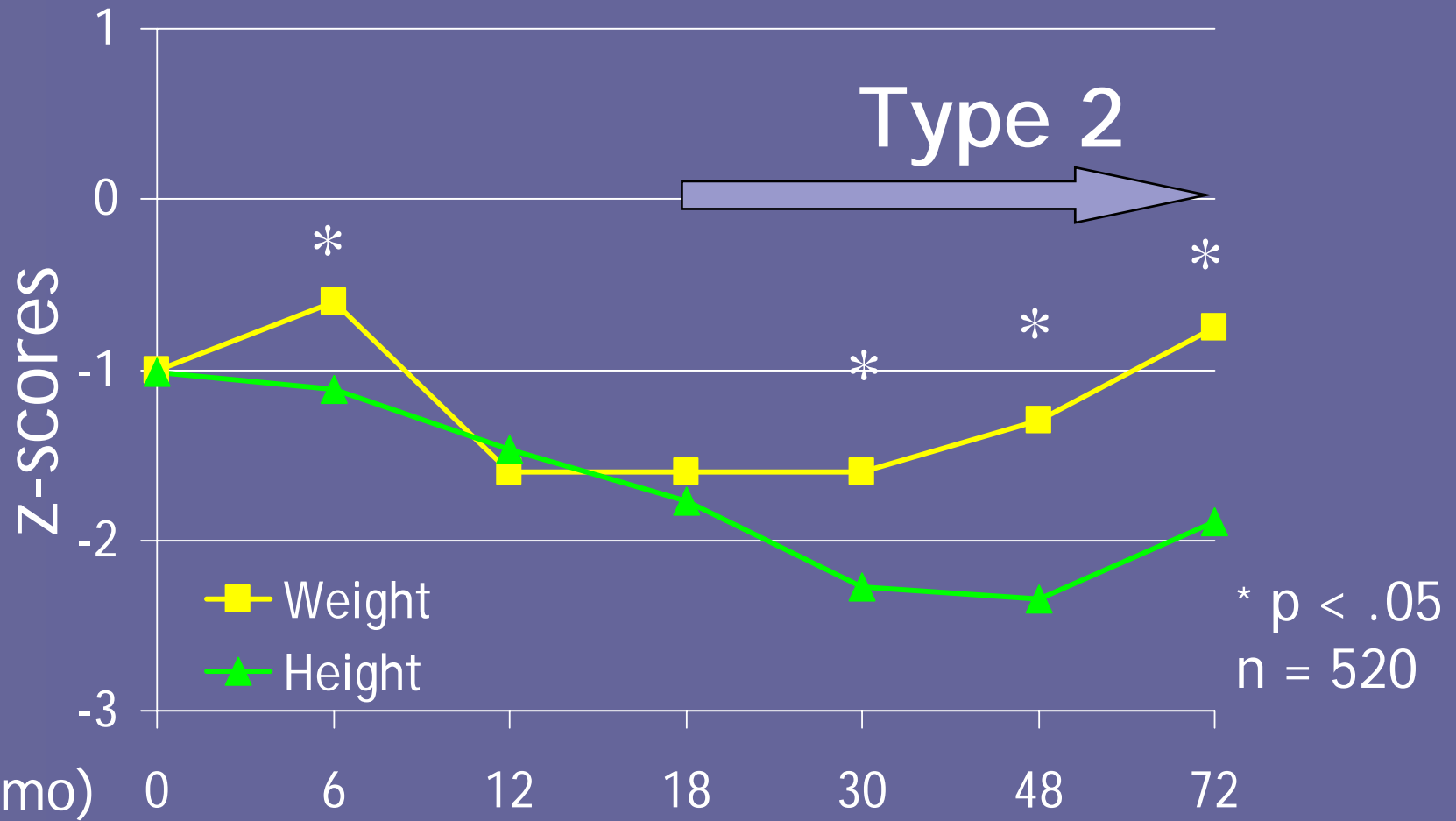
Arrival Height and Weight Z-Scores by Age Group in International Adoptees with Parent-Reported Deprivation



Arrival Height and Weight Z-Scores in Deprived Children



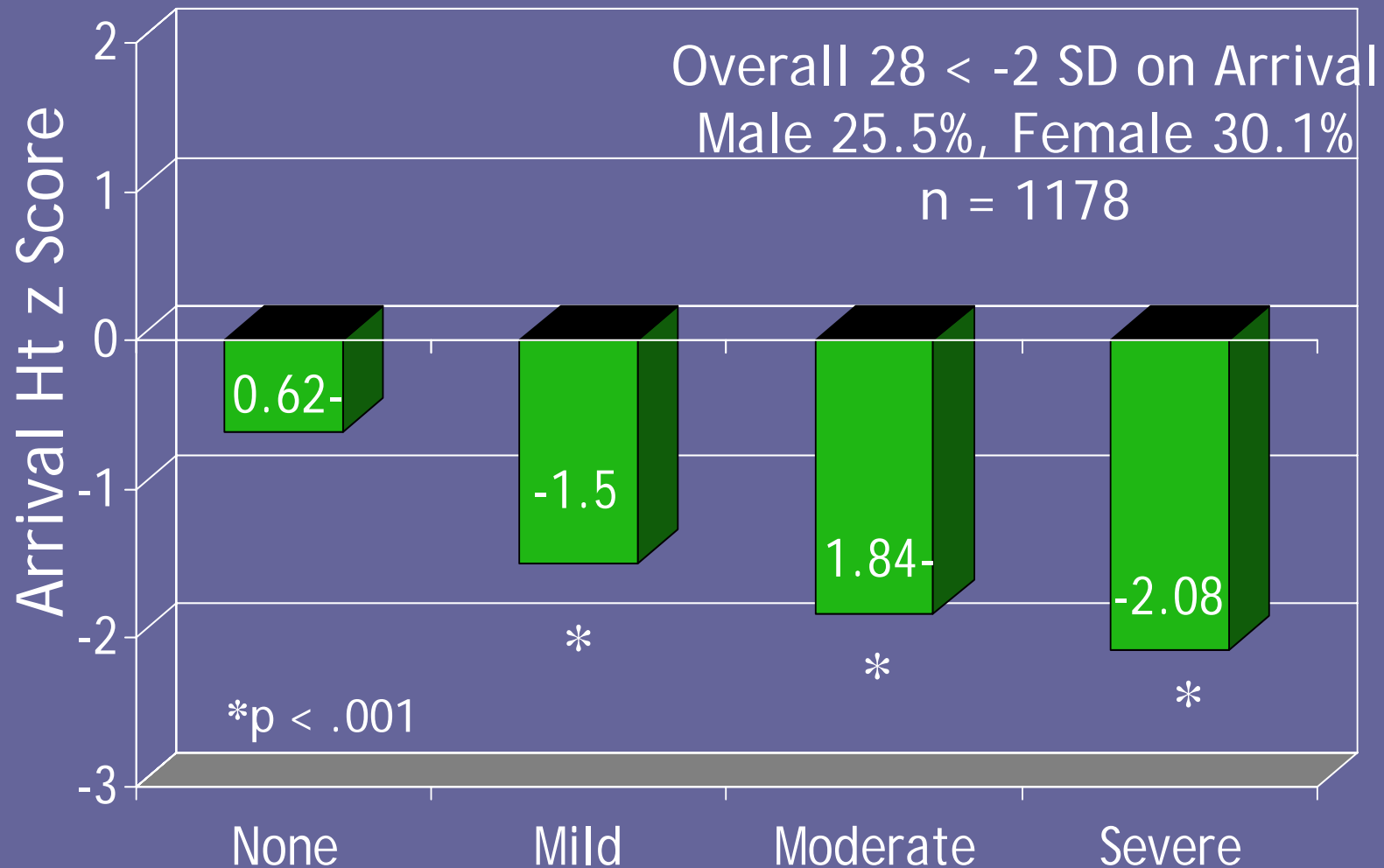
Arrival Height and Weight Z-Scores in Deprived Children



Effect of Orphanage Confinement on Growth

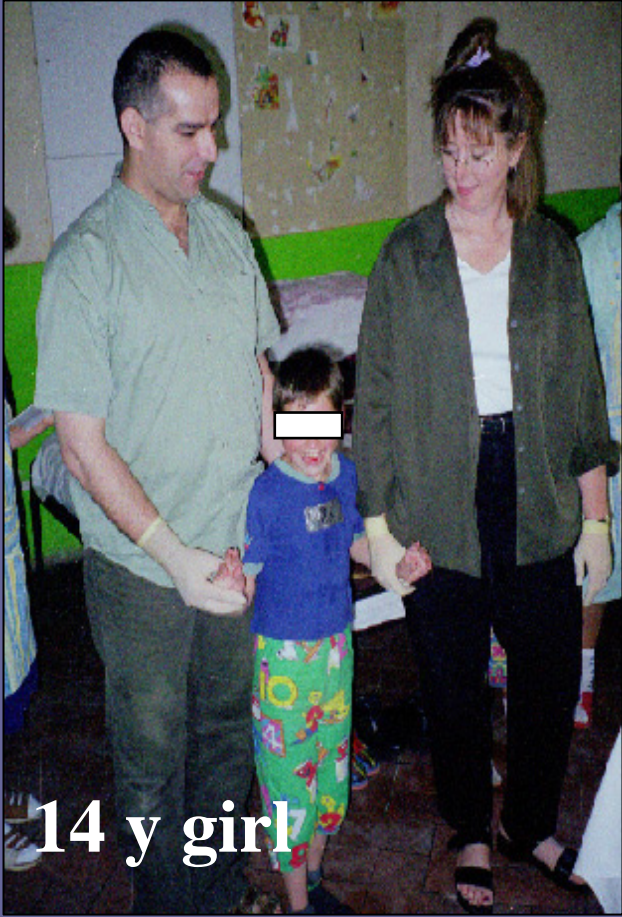
- Institutionalized Children Fall Behind One Month of Growth for Every:
 - 2.6 Months in a Romanian Orphanage
 - 3.0 Months in a Chinese Orphanage
 - 3.4 Months in a Russian Orphanage

Relationship Between Neglect/Abuse and Stunting





11 y girl

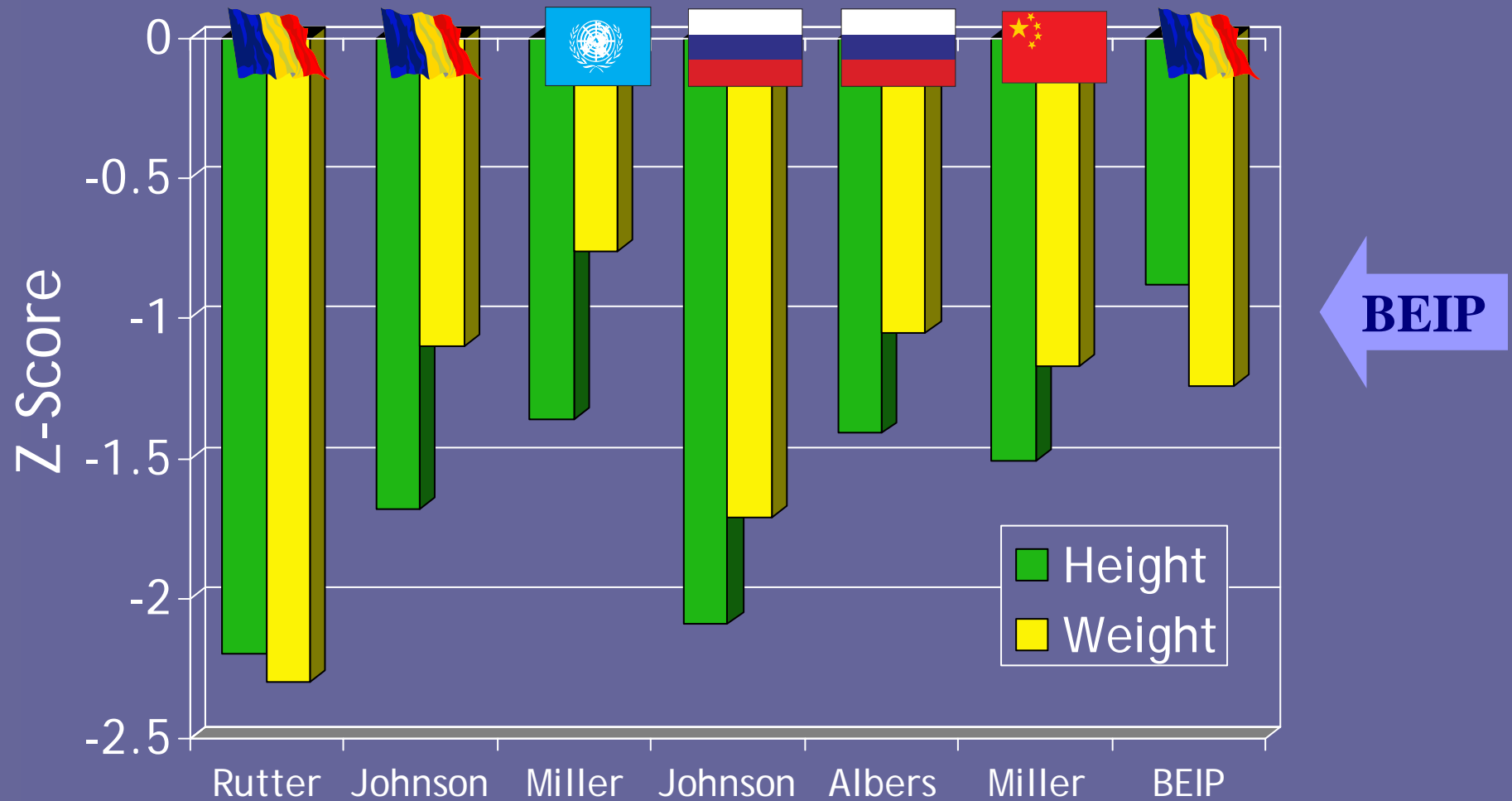


14 y girl

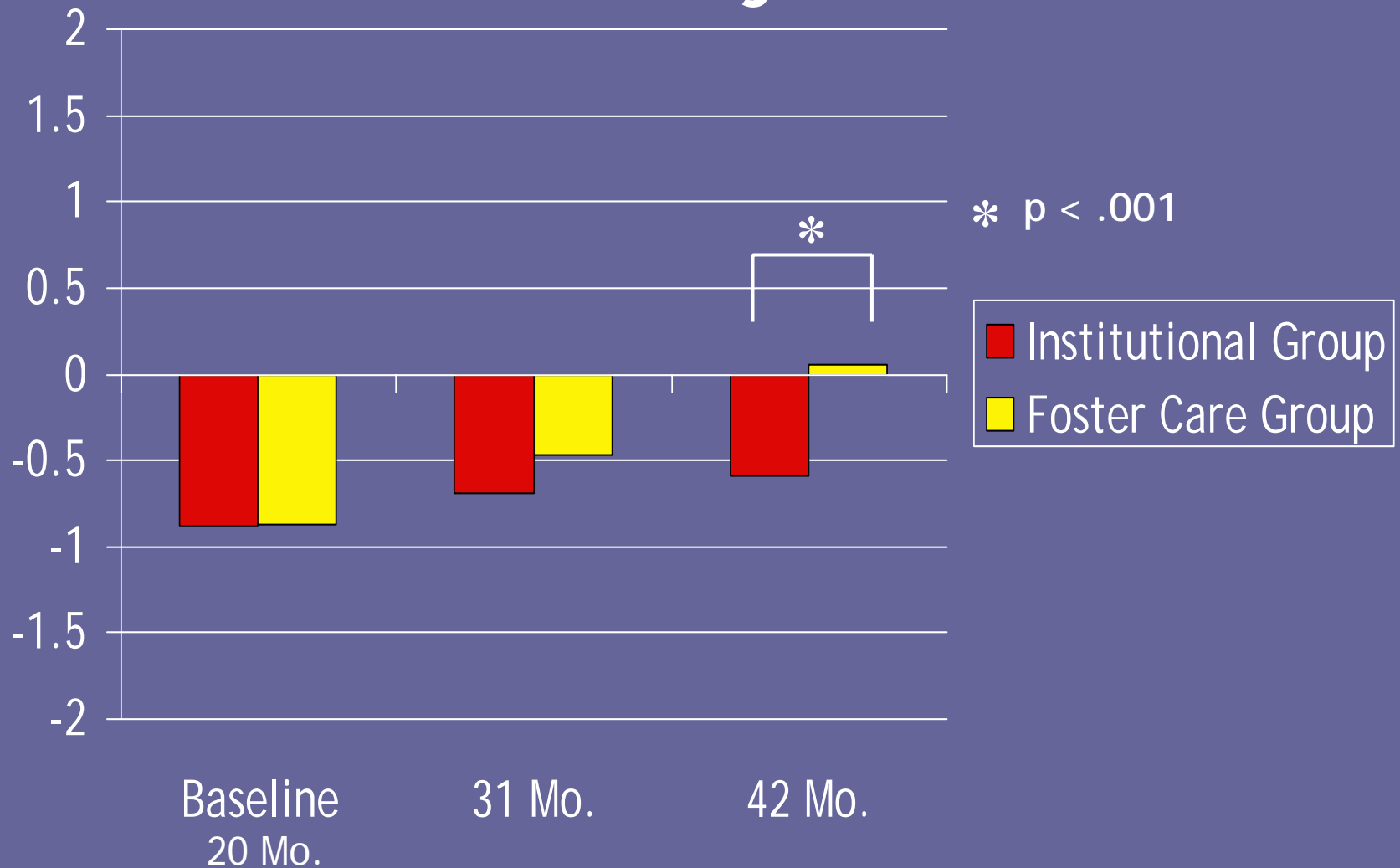


17 y girl

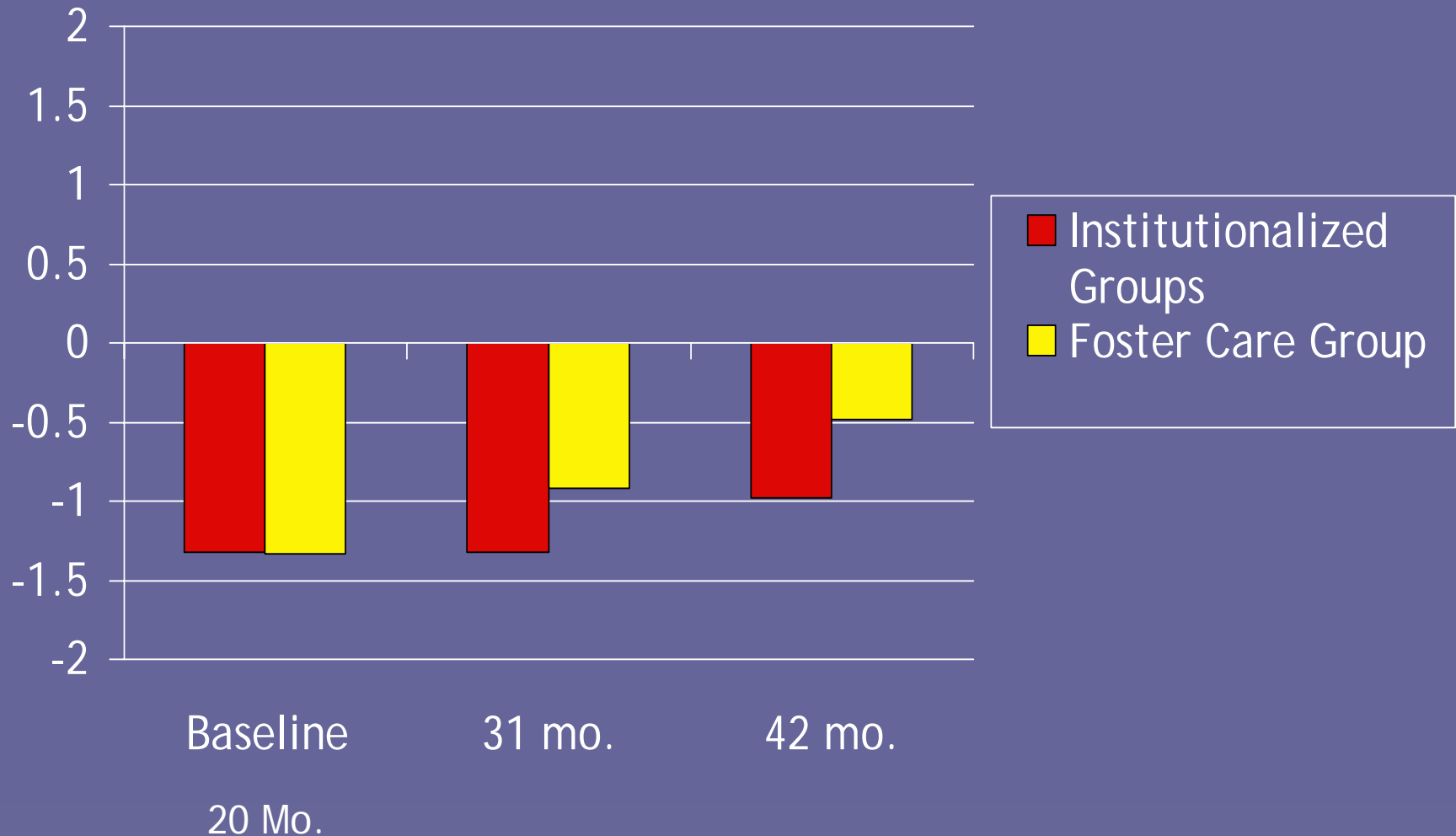
Growth Failure in Institutionalized Children



BEIP Height Z-Scores All Subjects



BEIP Weight Z-Scores All Subjects



Nutrient Intake within 2-4 Weeks of Arrival for Rapidly Growing International Adoptees

Group	Calories (Kcal)	Protein (g)	Fat (g)	Carb (g)
US Mean for 1-2 yo	1289	48	49	170
Adoptees	1015	39	35	139
DRI	1019	13	ND	130



Growth Failure as a Marker of Child Well-Being

BEIP Intercorrelations Between Height-for-Age and the Caregiving Environment, Cognitive Development and Behavior at Baseline

- Caregiving Environment
 - Quality of Caregiving Environment .17*
- Cognitive Development
 - Developmental Quotient .37**
 - Receptive Language .34**
 - Expressive Language .28**
- Problem/Competence Behaviors
 - Competence .29**
 - Depression/Withdrawal -.17*

*p<.05, **p<.01

Growth and Child Well-Being

Conclusions

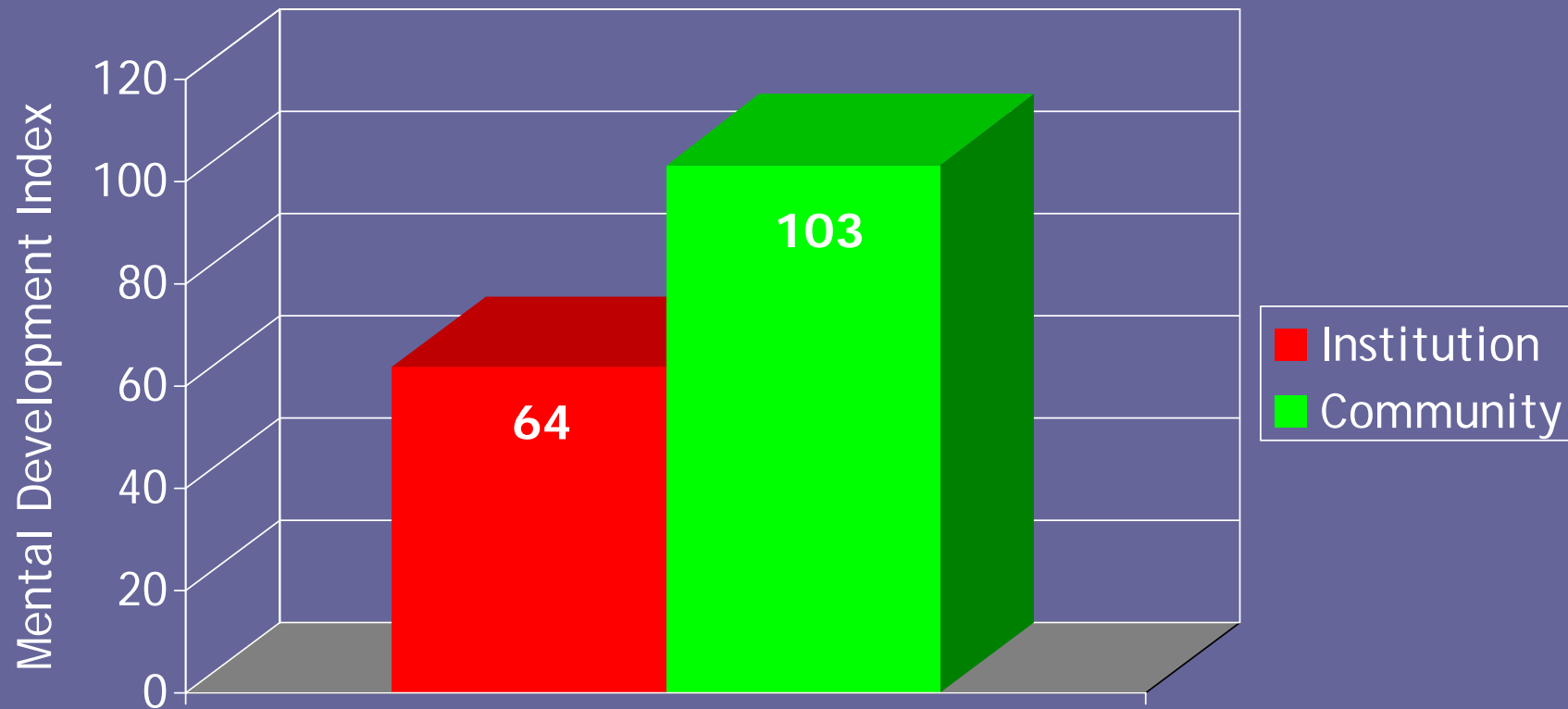
- Poor growth is a marker of deprivation.
- Simple measurement of stature can help assess:
 - Quality of Caregiving Environment
 - Cognitive Abilities
 - Some Problem/Competence Behaviors
- Shortcomings:
 - Most useful in situations that are significant departures from normal.



Findings from the Bucharest Early Intervention Study

- Domains of assessment to be discussed
 - IQ
 - Brain Development

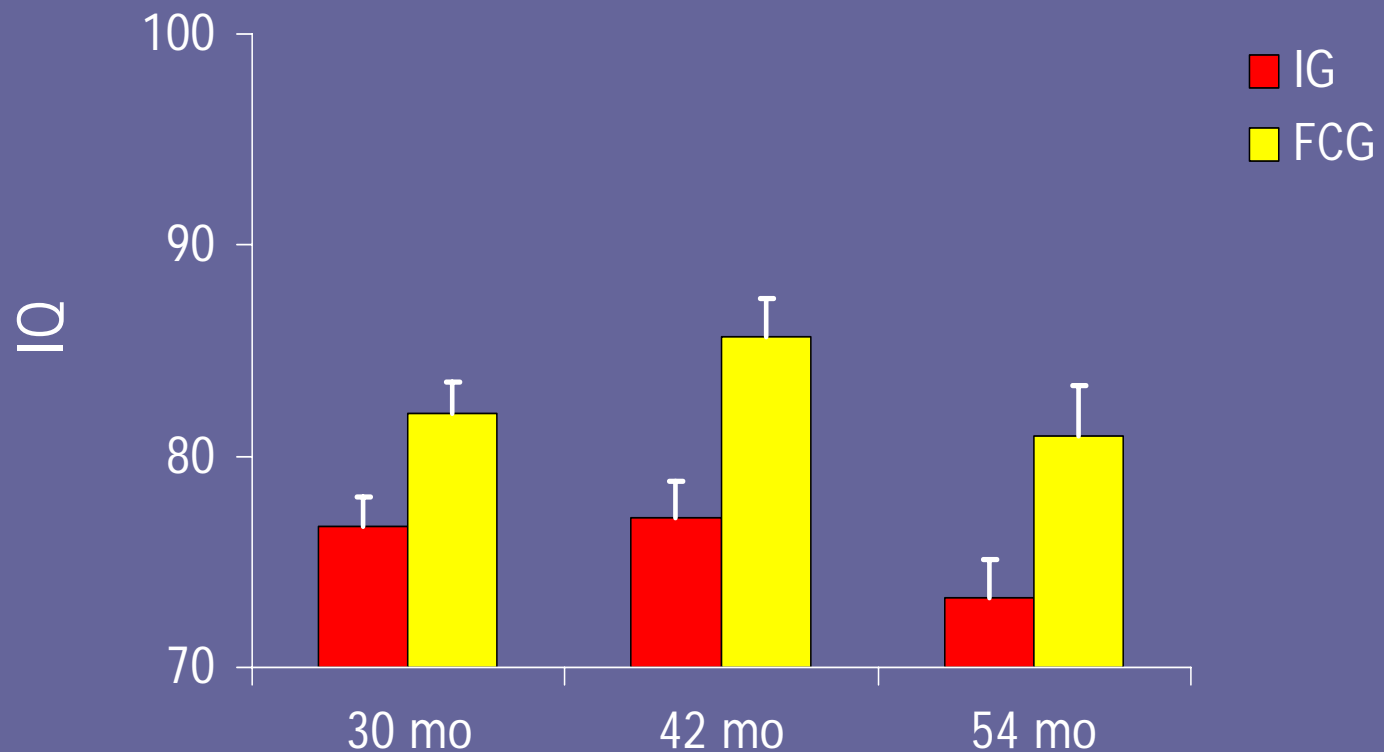
Bayley Scales of Infant Development (MDI) (at baseline)



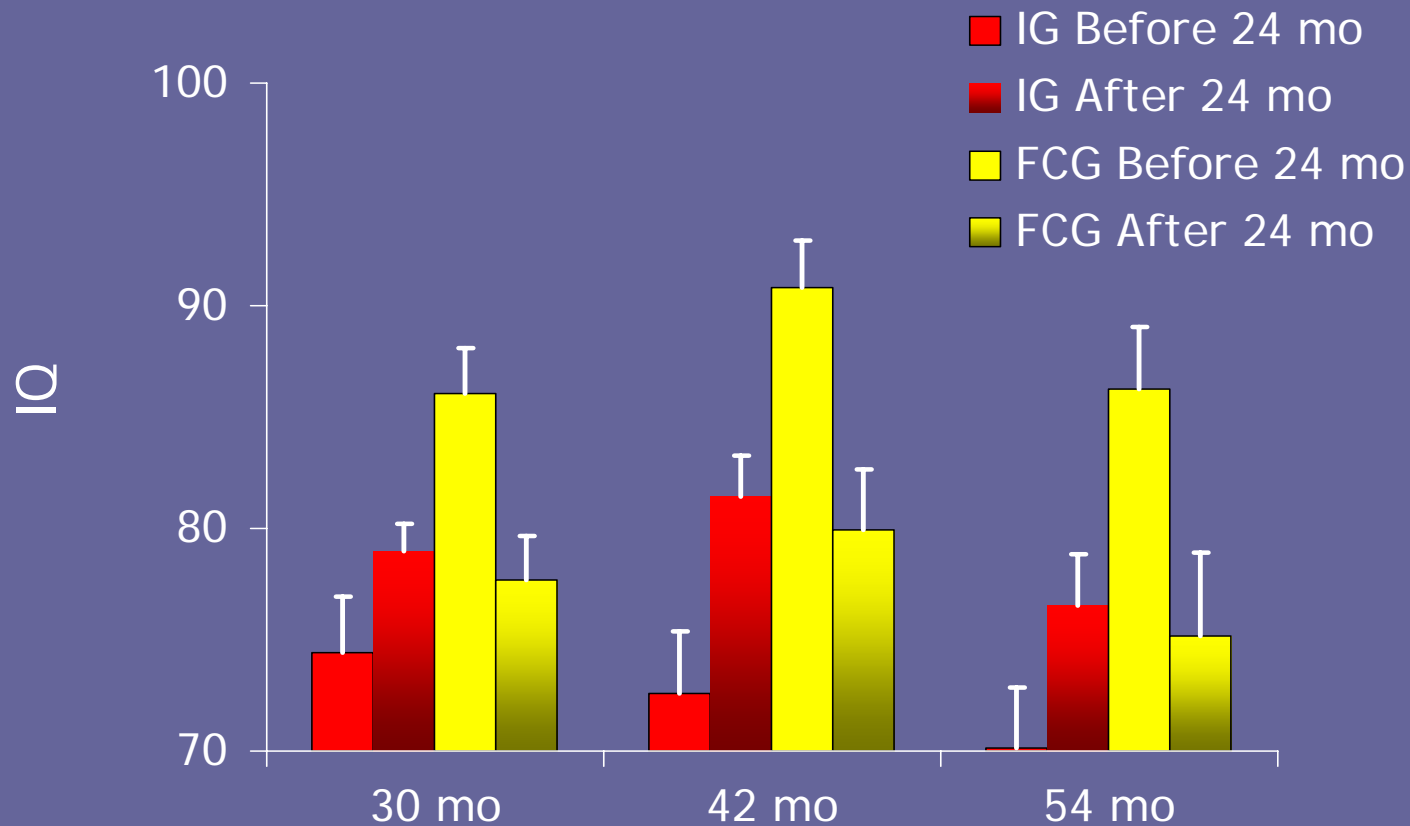
IQ at three follow-up age points for all three groups of children



IQ Scores of Foster Care and Institutionalized Groups at Follow-up



IQ Scores of Foster Care and Institutionalized Groups at Follow-Up Broken Down by age of entry into Foster Care



Summary of IQ data

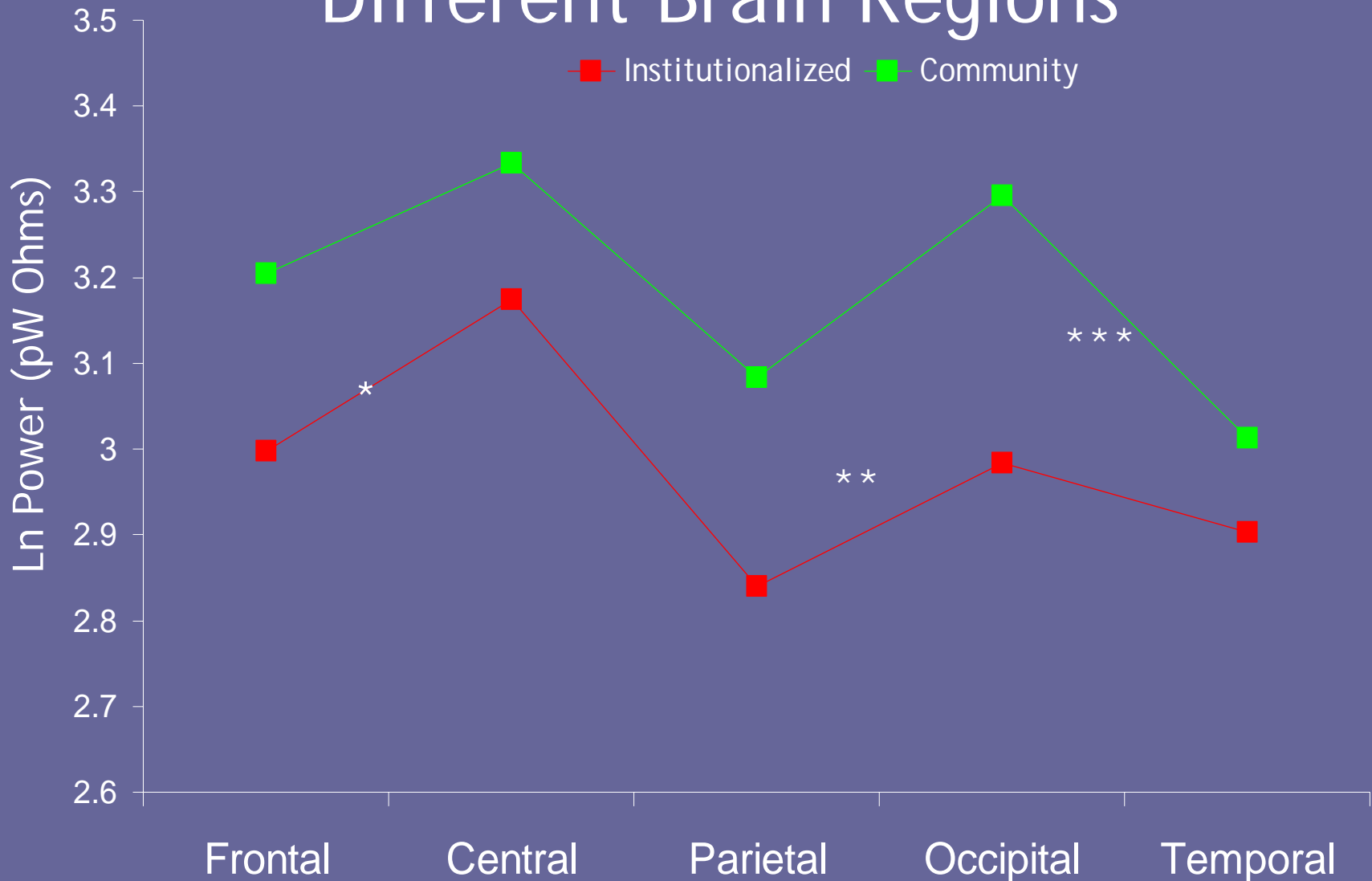
- Compared to typically developing Romanian children, children in Institutions display significant deficits in IQ.
- Children placed into foster care show marked increases in IQ compared to children remaining in institutions.
- Age of entry into foster care matters. Children entering foster care before 24 months display better improvement compared to those entering intervention later.



Brain Development: Electroencephalogram (EEG)

- The EEG reflects the electrical activity generated by the entire brain, and provides a general measure of brain development
- The EEG is recorded by placing sensors on the head, which detect the electrical activity generated by the brain.

Alpha Power (6-9 Hz) Across Different Brain Regions



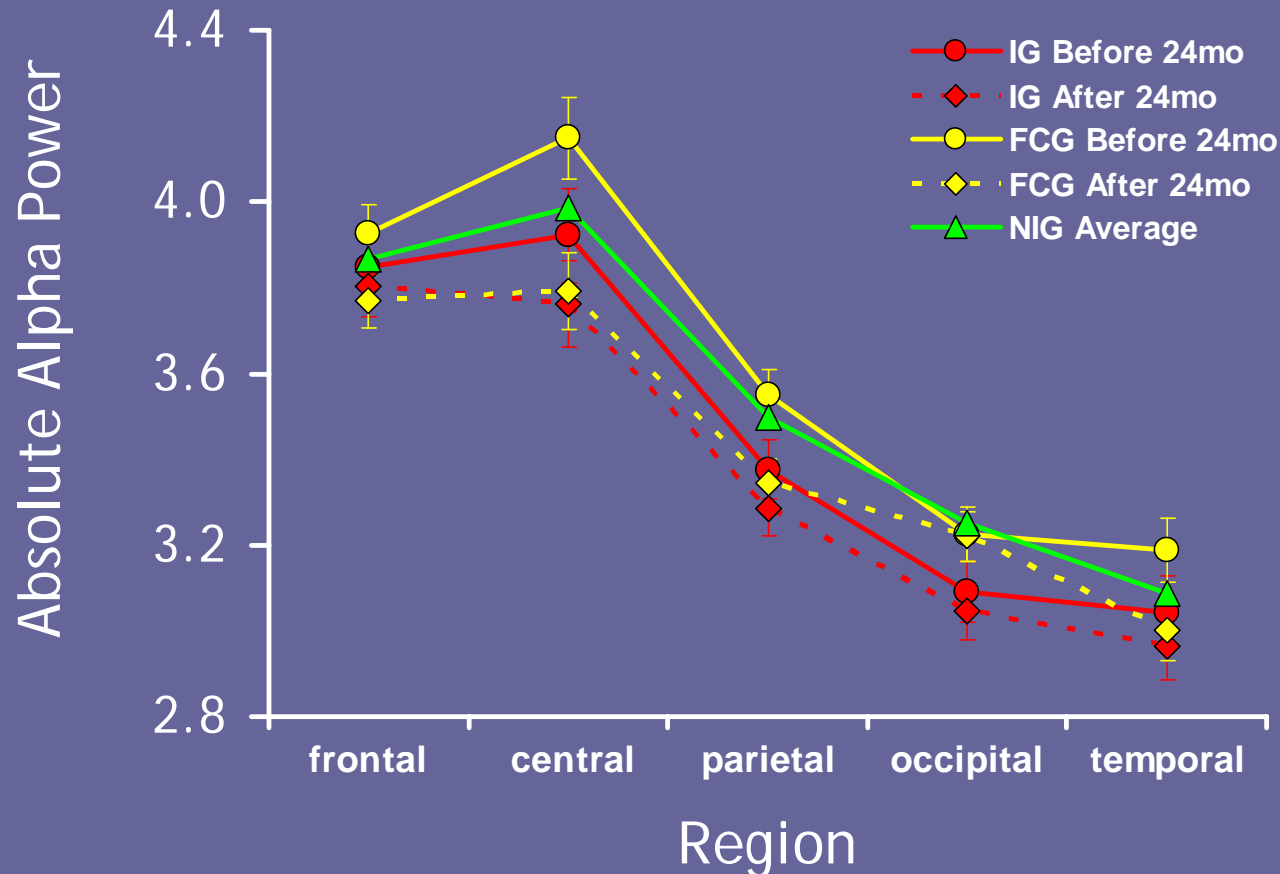
Summary of Baseline EEG Findings

Compared to community controls, institutionalized children have lower levels of brain activity...

- Across different brain regions
- Across different frequency bands*

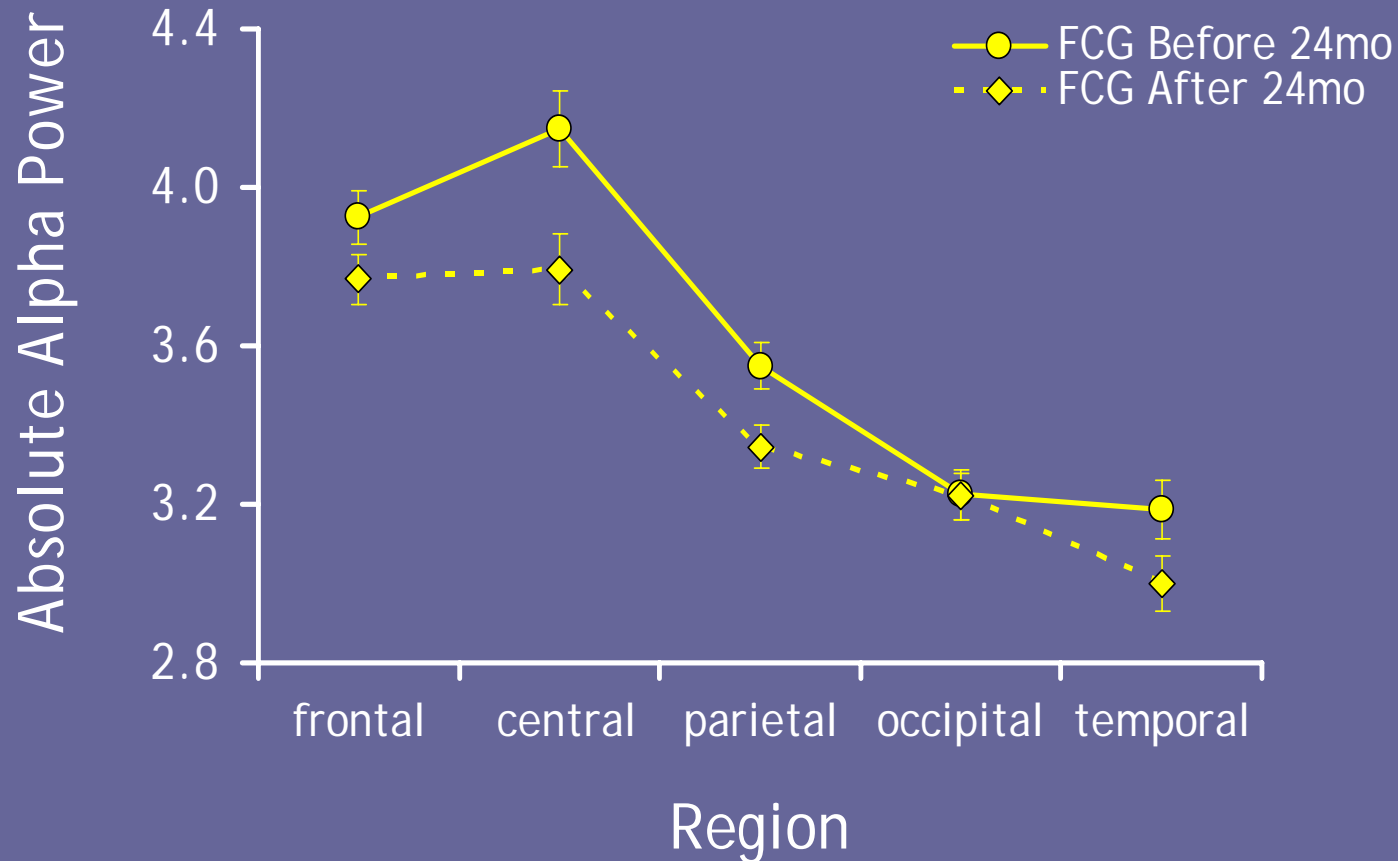
* a frequency band refers to the type of electrical activity generated by the brain. Some types are associated with sensory processing (alpha activity), whereas others are associated with cognitive processing (beta activity).

EEG Alpha Power across sites, for both IG and FCG children, collapsed across 30 and 42 month assessments



Region \times Group \times Age in Institution: $F(8,296) = 2.539, p = 0.011$

EEG Alpha Power for Foster Care Children, collapsed across 30 and 42 month assessments, for children entering foster care before or after 24 months of age



Region \times Age in Institution: $F(4, 172) = 3.948, p = 0.004$
Age in Institution: $F(1, 43) = 3.942, p = 0.053$

Summary of EEG Power Findings

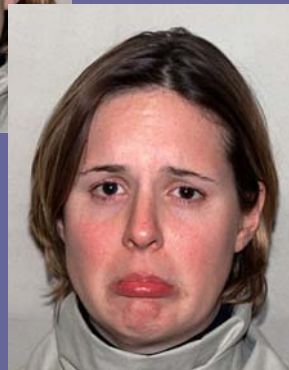
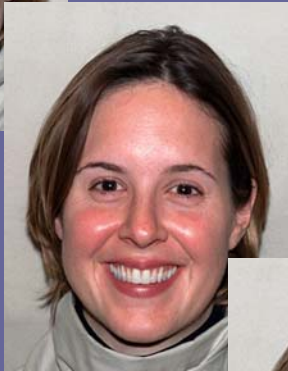
- Alpha power increases in children placed in foster care relative to those who remain in the institution
- These effects are more pronounced for children who were placed early in foster care (before they were 24 months of age)
- Length of intervention is correlated with increases in alpha power in the foster care group



BEIP ERP Emotion Task

Baseline & 42-month
Assessments

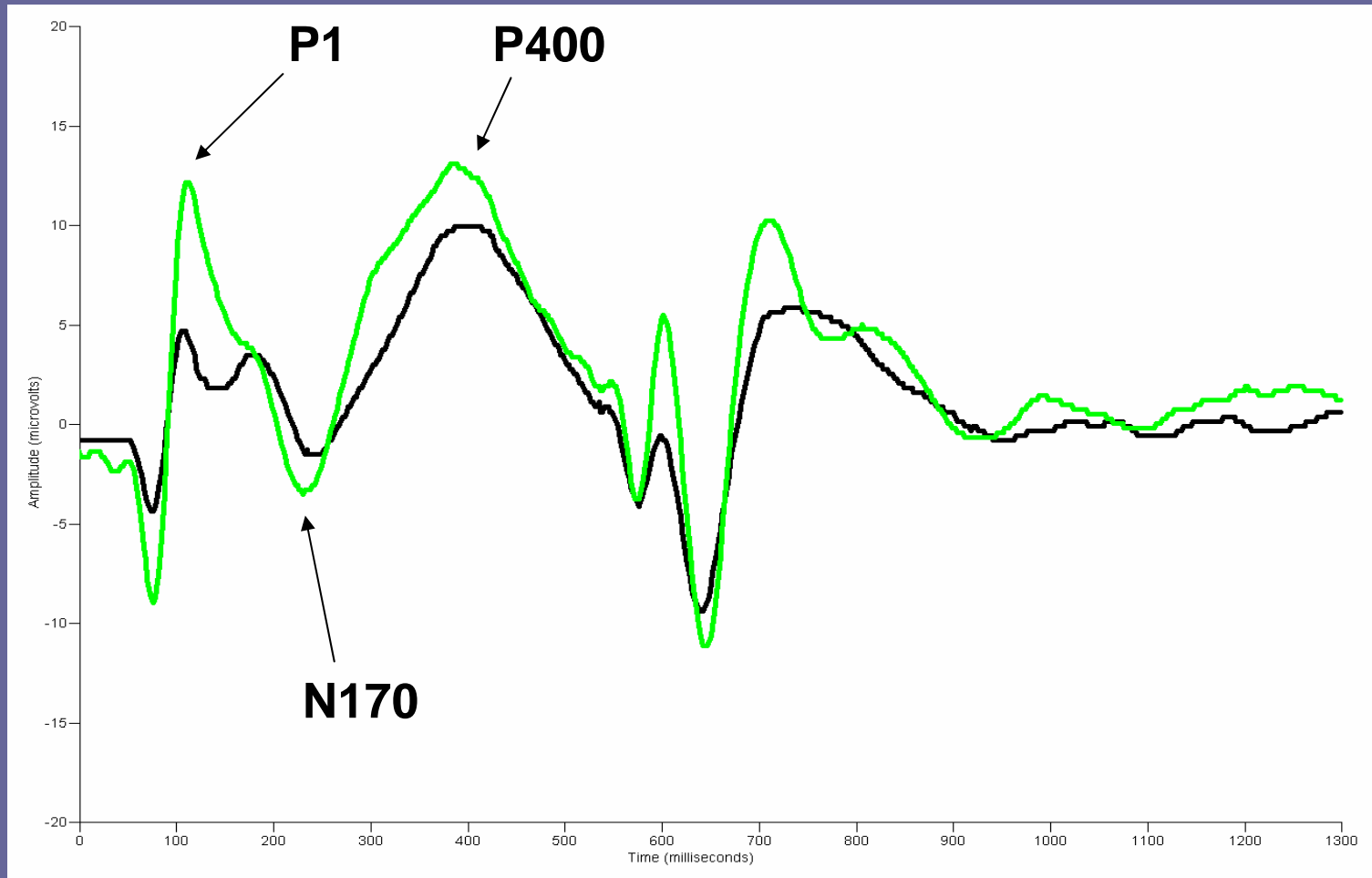
ERP Task: Emotion Recognition



- Angry, happy, fearful, sad female faces
- Shown with equal probability

Never Institutionalized Group
Institutionalized Group

O2: Right Occipital Electrode
*collapsed across emotion

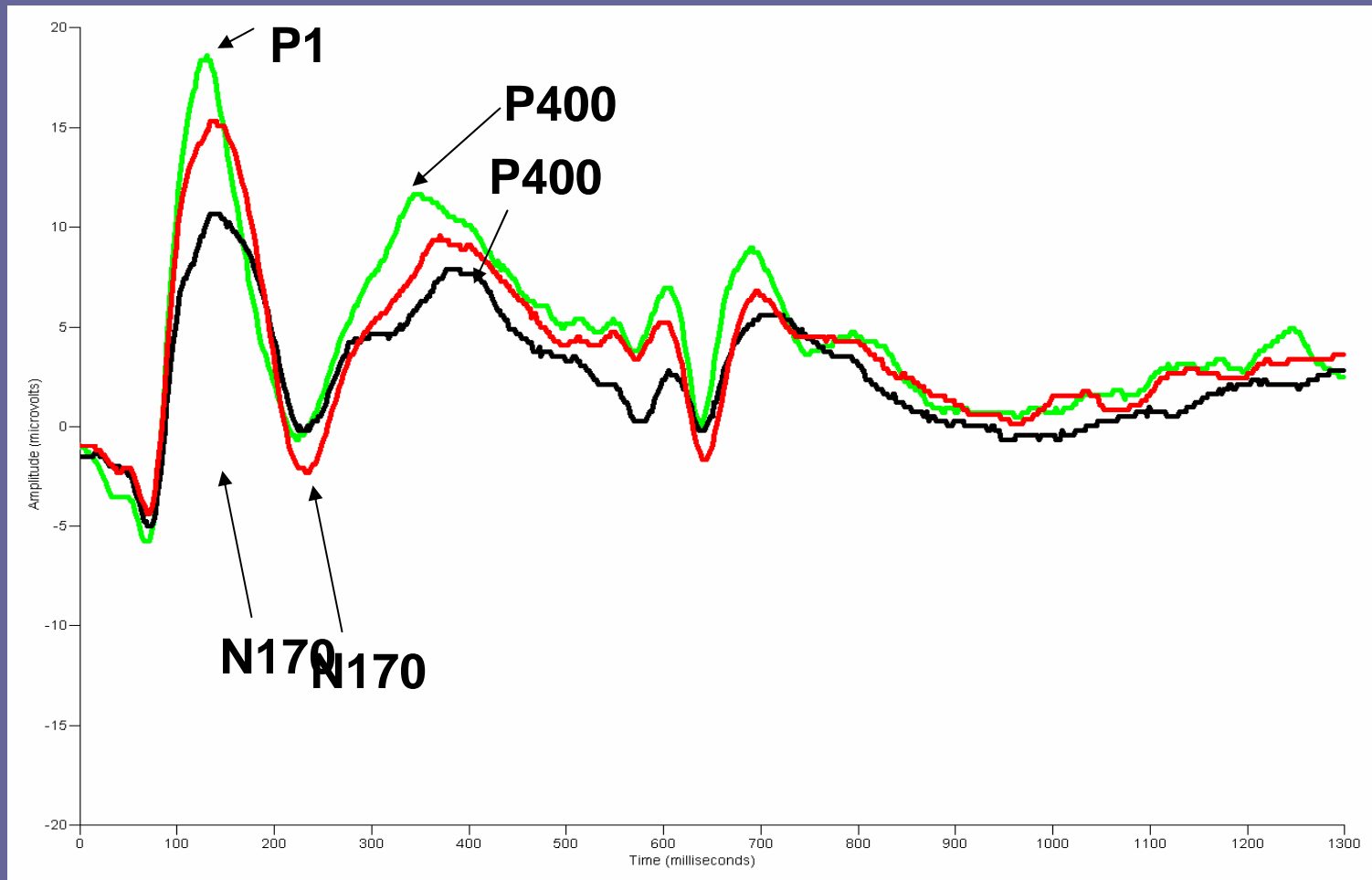


Summary of Baseline ERP Results

- For all occipital components (P1, N170, P400), the never-institutionalized group shows larger amplitudes and shorter latencies than the institutionalized group
- The never-institutionalized group also shows right-hemisphere specialization for faces, whereas the institutionalized group does not

Never Institutionalized Group
Foster Care Group
Institutionalized Group

O2: Right Occipital Electrode
*collapsed across emotion





Summary of 42-month ERP Results

- For the P1 and P400, the never-institutionalized group shows larger amplitudes than the institutionalized group
- The foster care group shows amplitudes that fall in between the other two groups

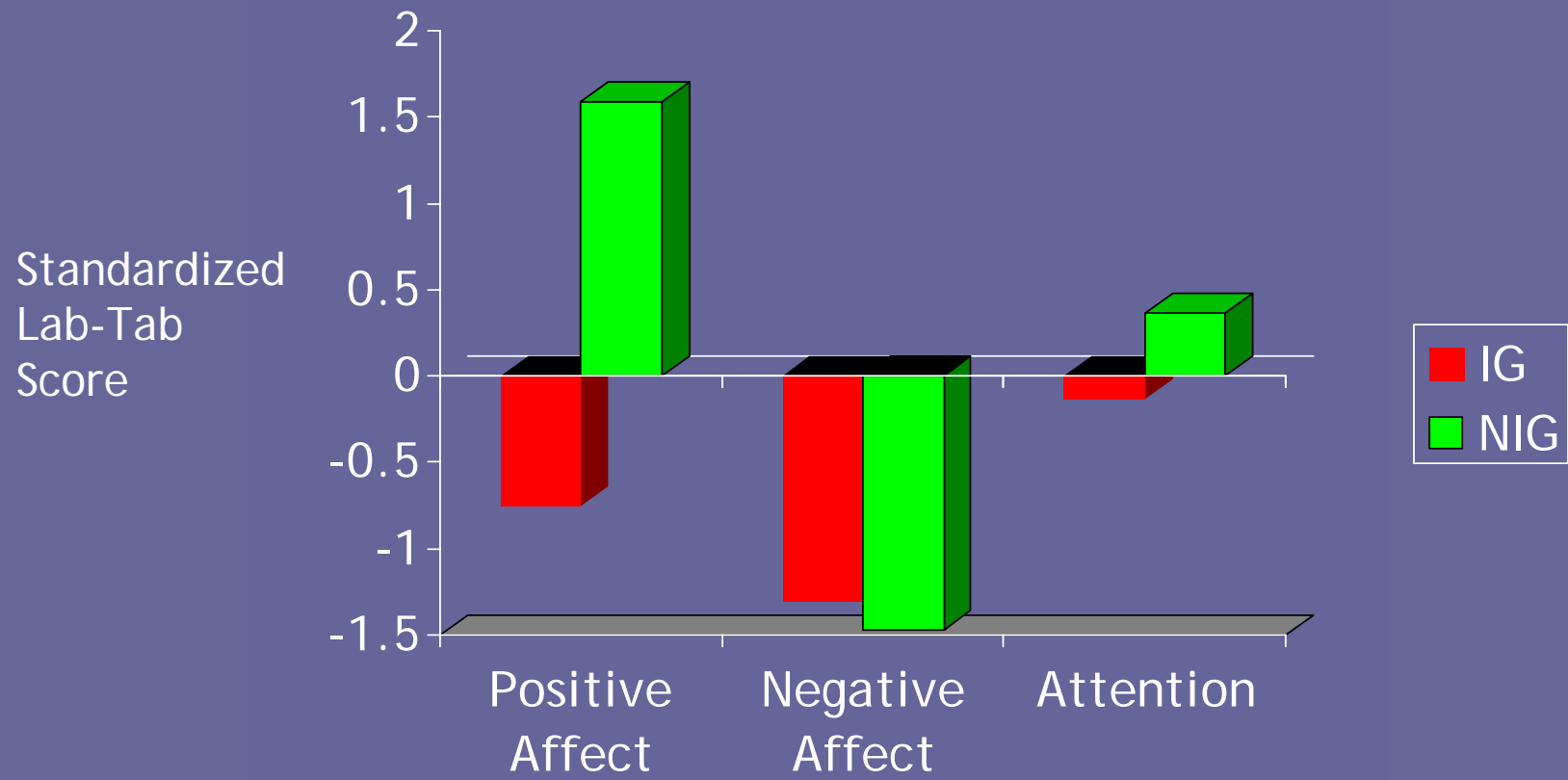
Summary Findings

- Children raised in orphanages have significantly low IQs and compromised brain development
- Taking children out of institutions and placing them in alternative family care enhances children's IQ and brain development
- The earlier the better!



Emotional Expression and Attention

Differences between IG & NIG at Baseline

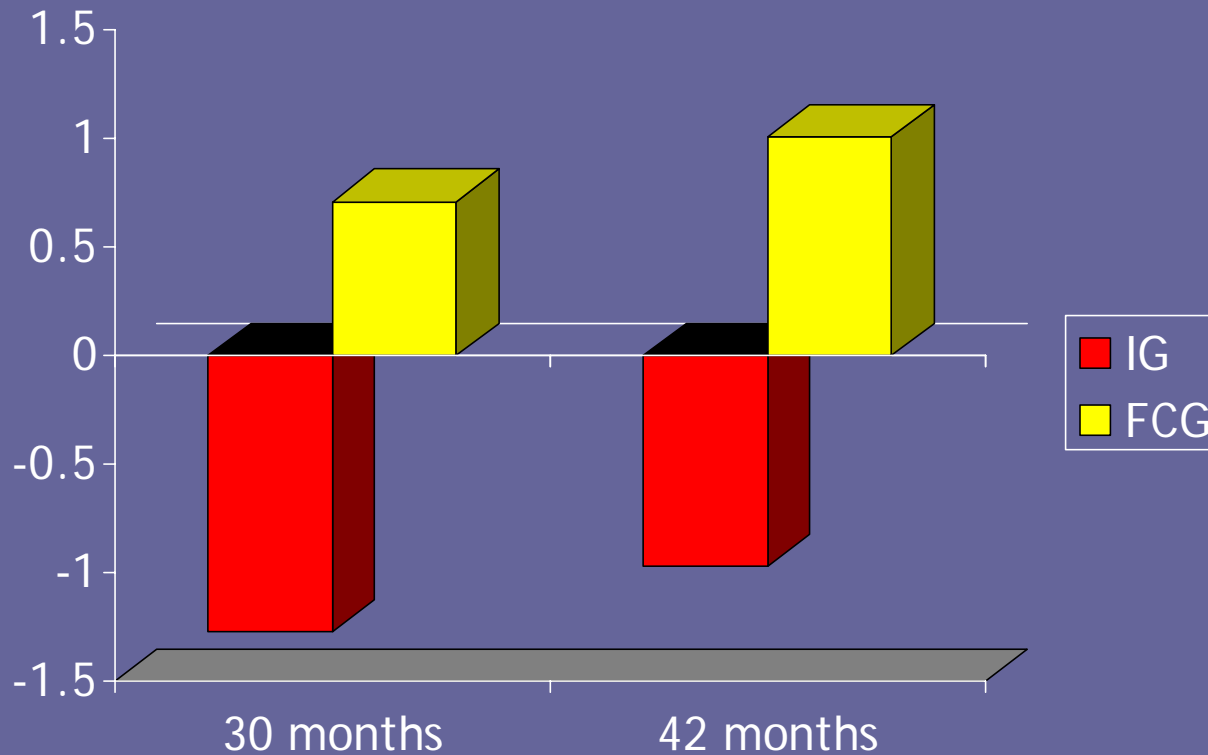


($F(1,181) = 13.00, p = .000$)

($F(1,182) = 5.22, p < .05$)

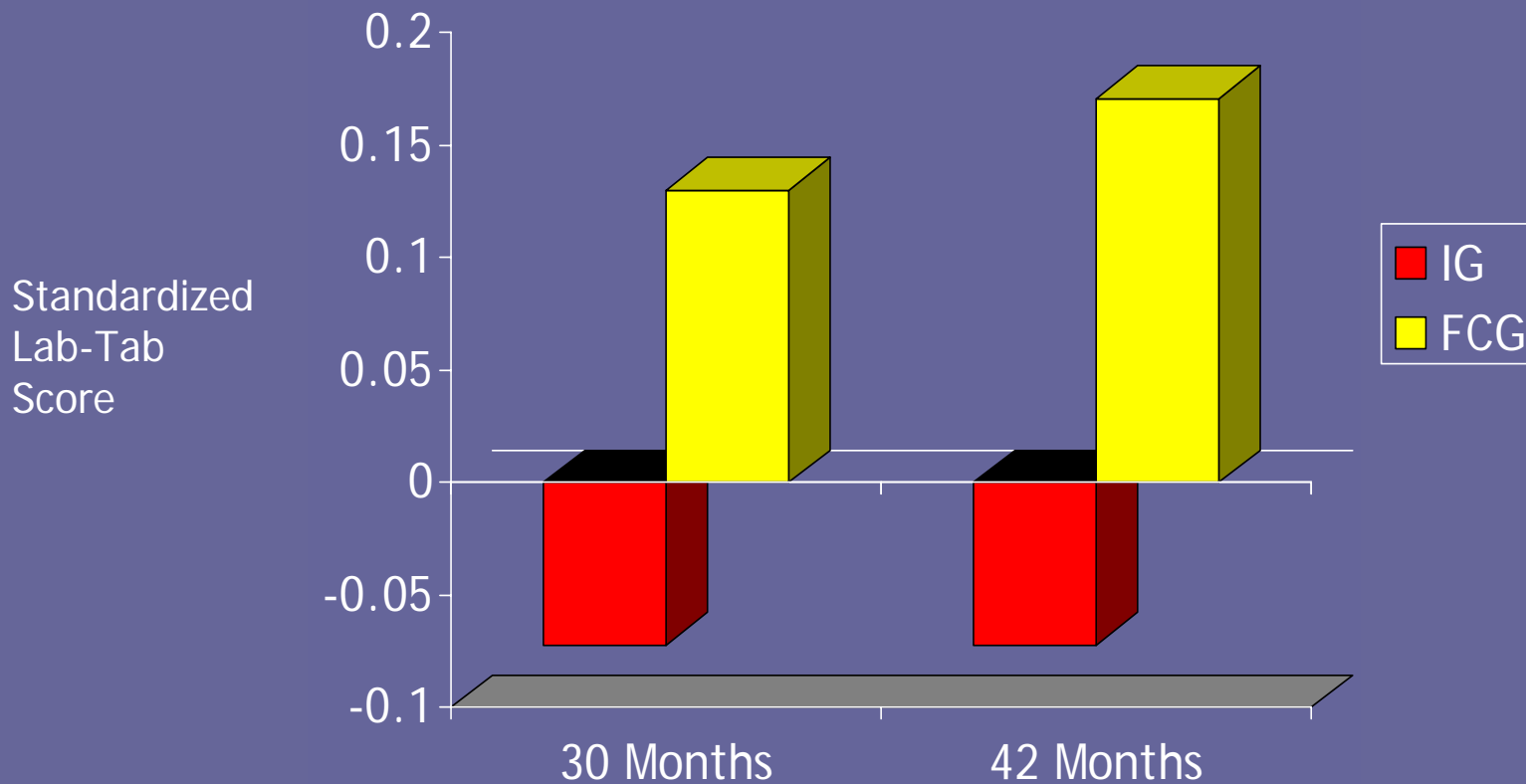
Effect of Foster Care on Positive Affect

Standardized
Lab-Tab
Score



$F(1, 99) = 18.55, p = .000$

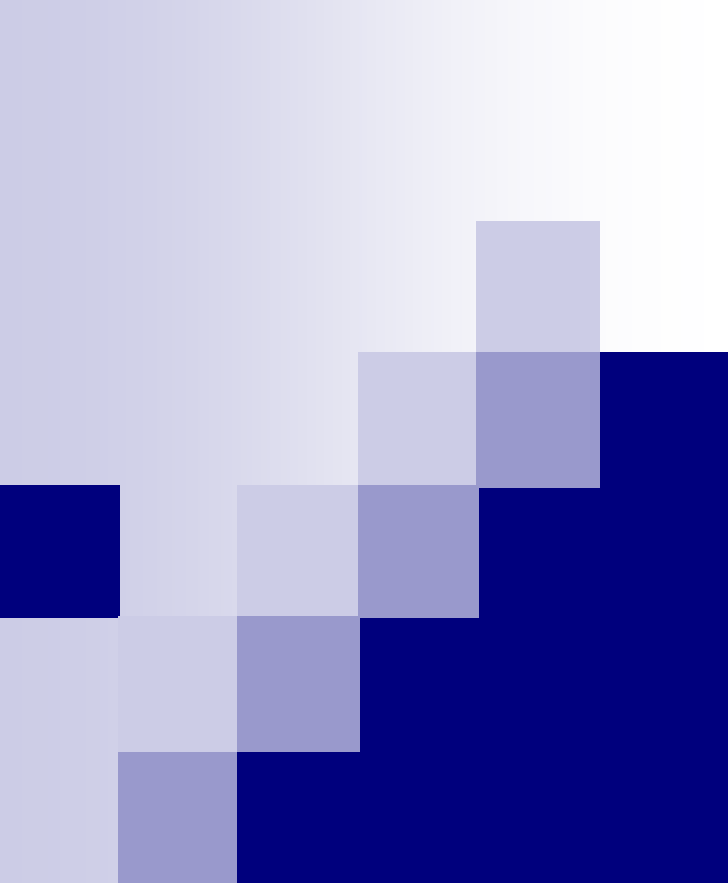
Effect of Foster Care on Attention



$F(1, 102) = 9.73, p < .01$

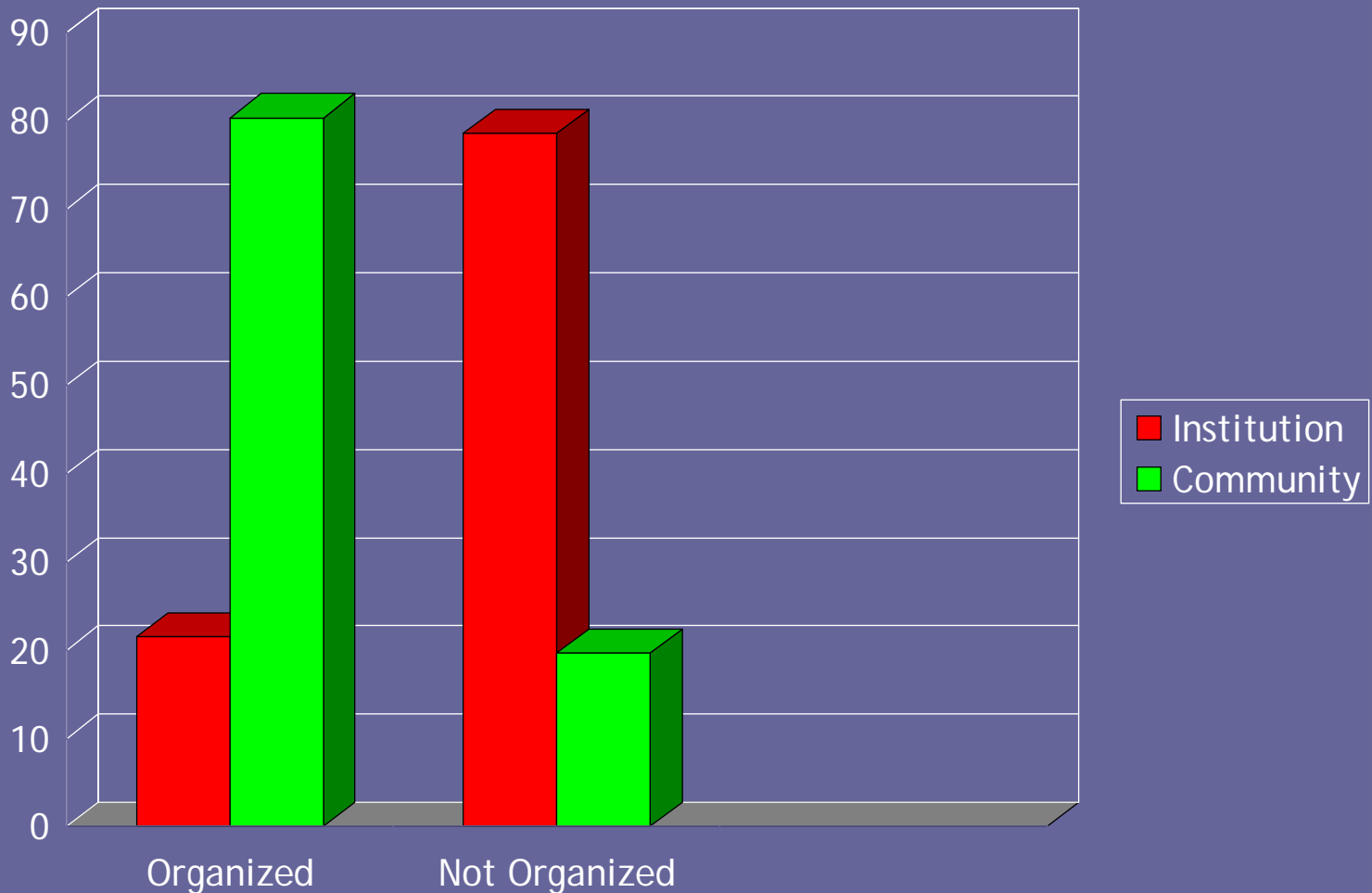
Summary of Findings on Emotional Reactivity

- Young institutionalized children display less positive affect and attention to tasks designed to elicit these responses in typically developing children
- Foster care appears to remediate these effects. Children placed in foster care show more positive affect and attention compared to institutionalized children
- There were no differences in negative affect



Attachment: Baseline Differences between Institutionalized and Community Children

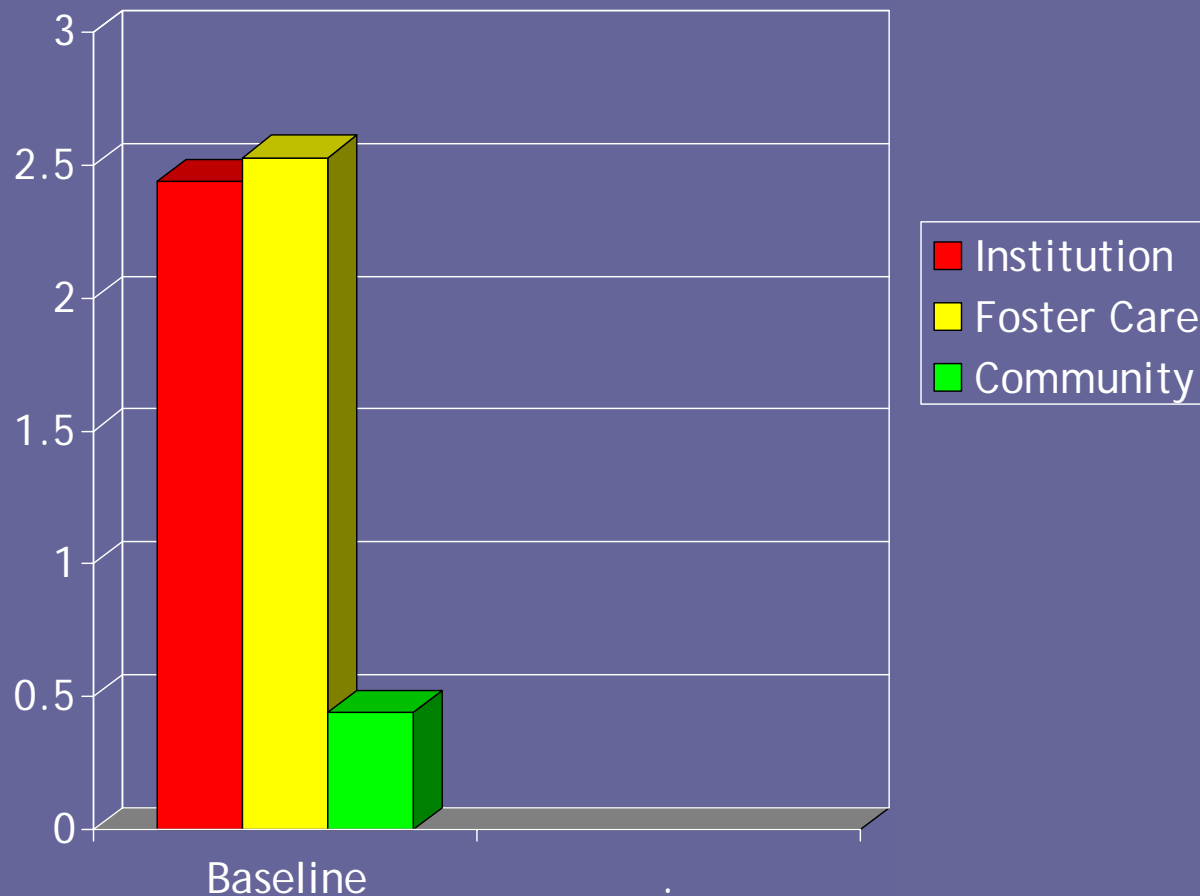
Attachment to Primary Caregiver in Institutionalized and Community Children



Degree to which Child Has Developed an Attachment

	<u>Romanian Community</u>	<u>Romanian Institution</u>
1=No Attachment	0%	9.5%
2=Some Differentiation	0%	25.3%
3=Clear Preference	0%	30.5%
4=Attachment Evident but with Anomalies	0%	31.6%
5=Fully Developed Attachment	100%	3.2%

Signs of RAD Emotionally Withdrawn/Inhibited at Baseline



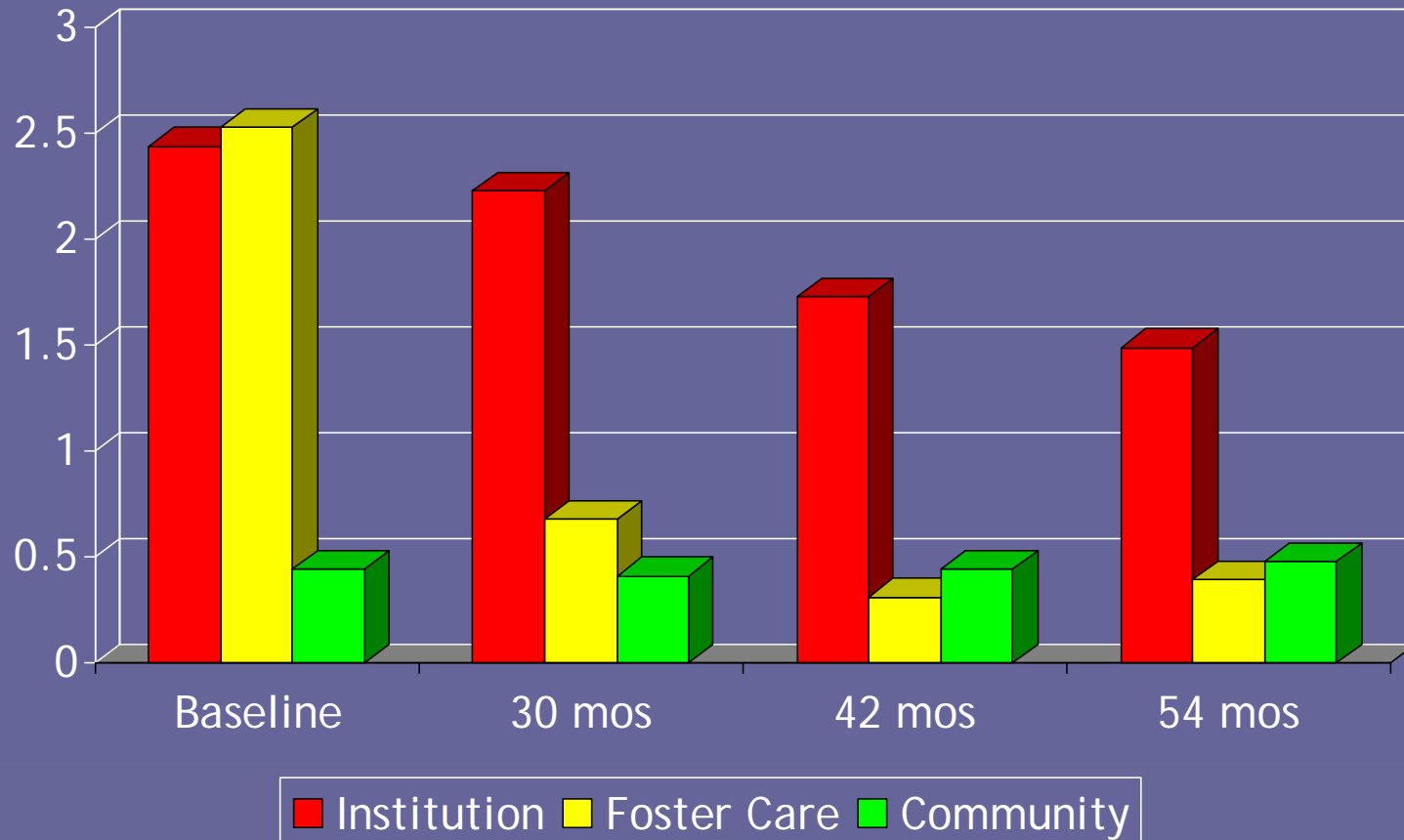
RAD Indiscriminate/Disinhibited



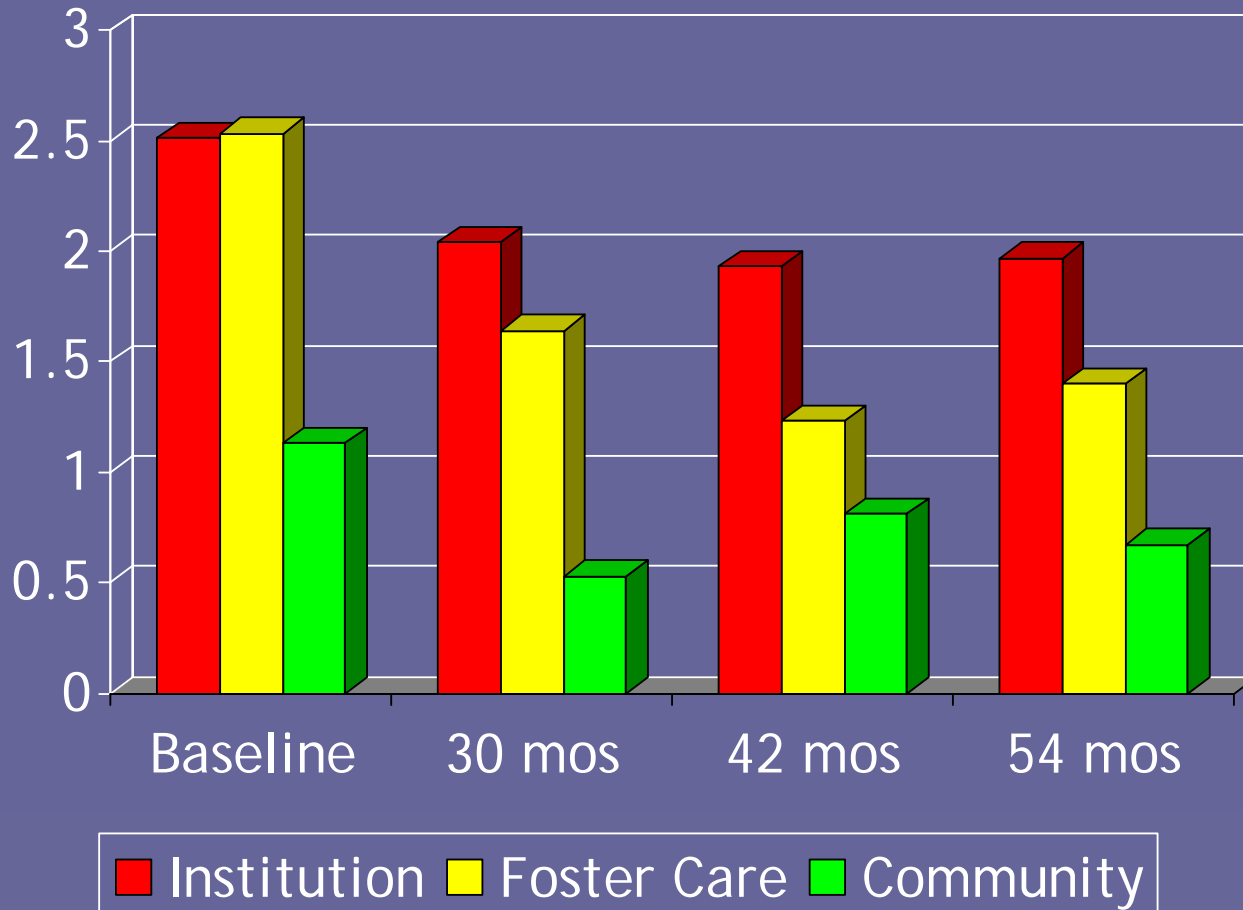



Attachment: Evaluation of the Intervention

Signs of RAD Inhibited reduced by foster placement



RAD Indiscriminate/Disinhibited



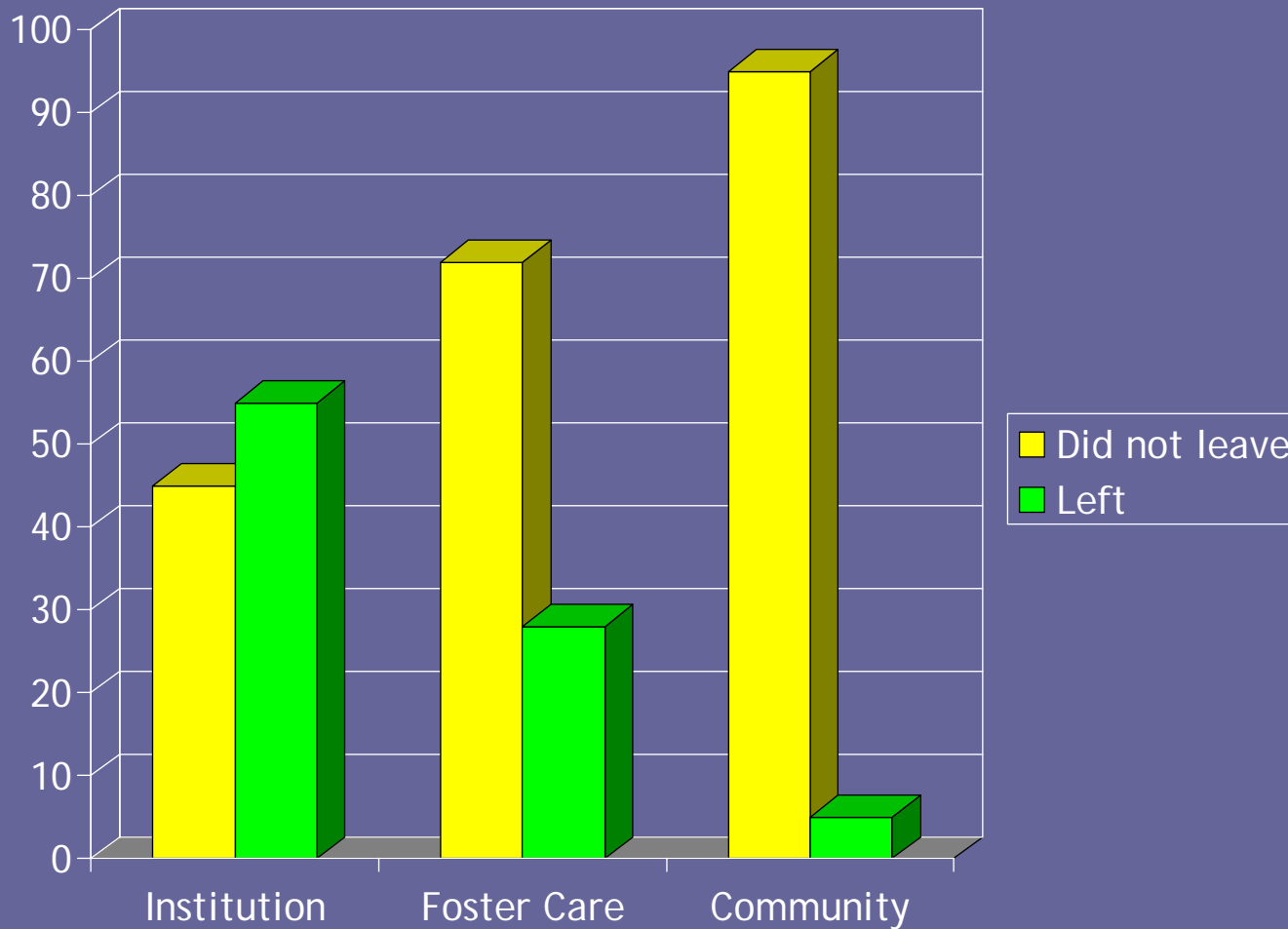


Attachment: Behavioral Assessment of Indiscriminate Behavior

Stranger at the Door at 54 months

- Caregiver/mother and child answer door (pre-arranged)
- RA: “Come with me, I have something to show you.”
- Walk out the door and around the corner to find RA from previous home visit

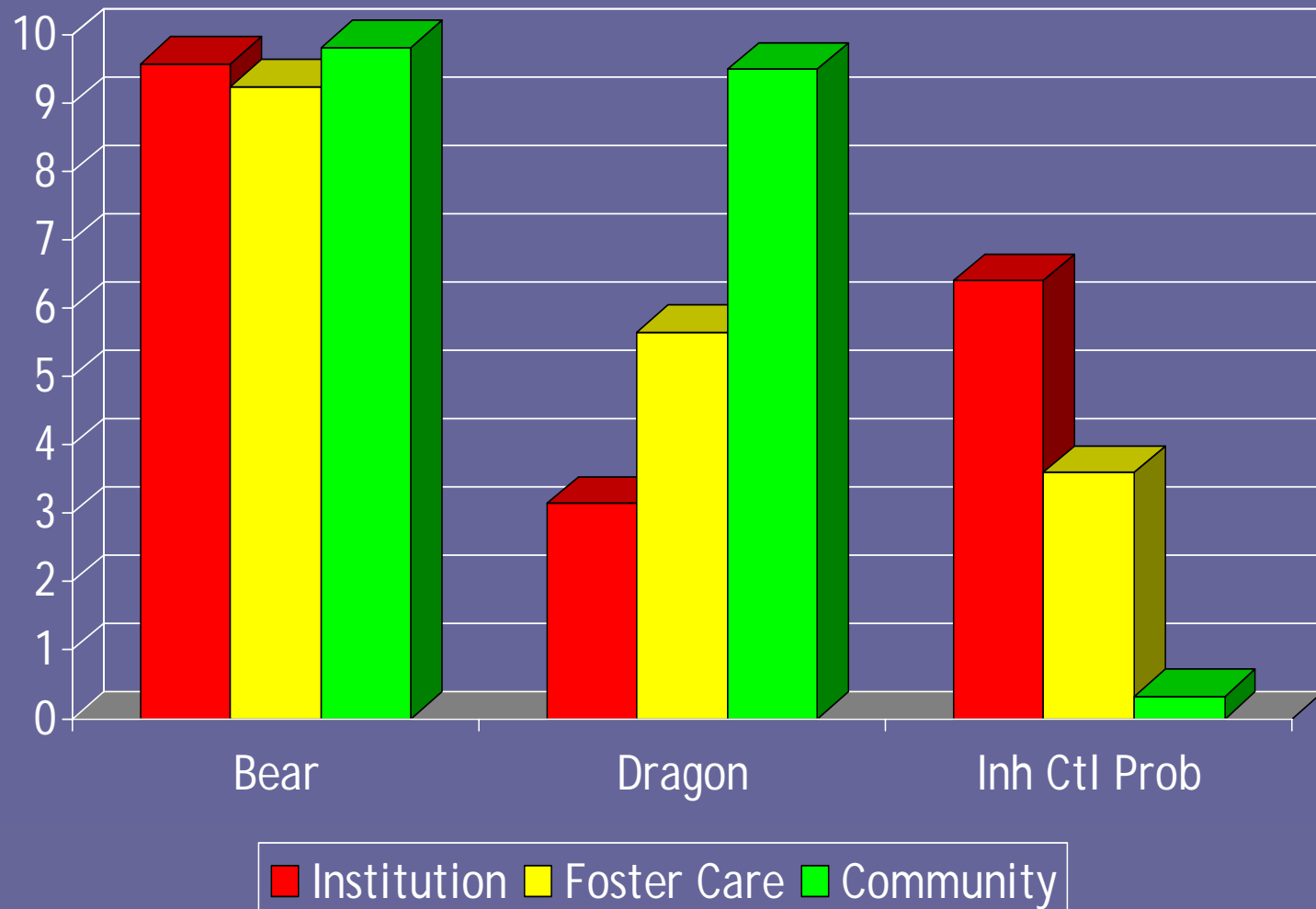
Stranger at the Door at 54 months





Impulsivity and Response Inhibition

Bear Dragon Task





Psychiatric Disorders

Community Prevalence

	Romanian Community	Durham Pediatric
Any disorder	13.6%	17.8%
Emotional disorder	8.5%	12.9%
Behavioral disorder	6.8%	10.7%

Prevalence of disorders, overall

	IG	FCG	NIG
Any axis I disorder	55.9% (N=33)	35.9% (N=23)	13.6% (N=7)
Any emotional disorder	49.2% (N=29)	21.9% (N=14)	8.5% (N=5)
Any behavioral disorder	32.2% (N=19)	25% (N=16)	6.8% (N=3)

History of Institutionalization

	IG/FCG	NIG	OR
Any axis I disorder	45.5% (N=56)	13.6% (N=8)	5.3 (2.3, 12) (p<.0001)
Any emotional disorder	35.0% (N=43)	8.5% (N=5)	5.8 (2.2, 16) (p=0.0005)
Any behavioral disorder	28.5% (N=35)	6.8% (N=4)	5.5 (1.8, 16) (p=0.002)

Prevalence of disorders, overall

	IG	FCG	NIG
Any axis I disorder	55.9%	35.9%	20.9%
Any emotional disorder	49.2%	21.9%	11.6%
Any behavioral disorder	32.2%	25%	9.3%

Comparison of Institutionalized and Foster Care Children

	IG	FCG	OR
Any axis I disorder	55.9%	35.9%	2.3 (1.1, 4.7) (p=0.03)
Any emotional disorder	49.2%	21.9%	3.5 (1.6, 7.5) (p=0.002)
Any behavioral disorder	32.2%	25%	1.4 (0.6, 3.1) (p=0.4)

Specific Disorders

	IG	FCG	NIG
ADHD	25.4%	18.8%	3.4%
ODD/CD	15.3%	14.1%	3.4%
Depression	8.5%	3.1%	0
Anxiety disorder	44.1%	20.3%	8.5%



The Institute for Child Development

Building Romania's
Child Development
Infrastructure

IDC: building on BEIP's momentum

- Non-political, science-based national resource serving the needs of Romania's most vulnerable children
- Focused on long-term improvement and care of children
- Integration... of research, training, clinical services
- Dissemination... to create and sustain a modern and effective child health and development system in Romania

KNOWLEDGE INFRASTRUCTURE



Toward building the IDC

- \$900,000 grant from the John D. and Catherine T. MacArthur Foundation for research
- Secured space at St. Catherine's Placement Center from the Romanian government
- Defined the IDC's organizational structure
- Conducted child development seminars
- Received clinical certification from Sector 1 Department of Child Protection
- Implemented model research and case management projects



Institute Concept

Research: building a local knowledge base

- Pilot and translate assessment tools
- Train Romanian investigators
- Conduct comprehensive needs assessment
- Foster exchange programs between US and Romania

Institute Concept

Clinical Services

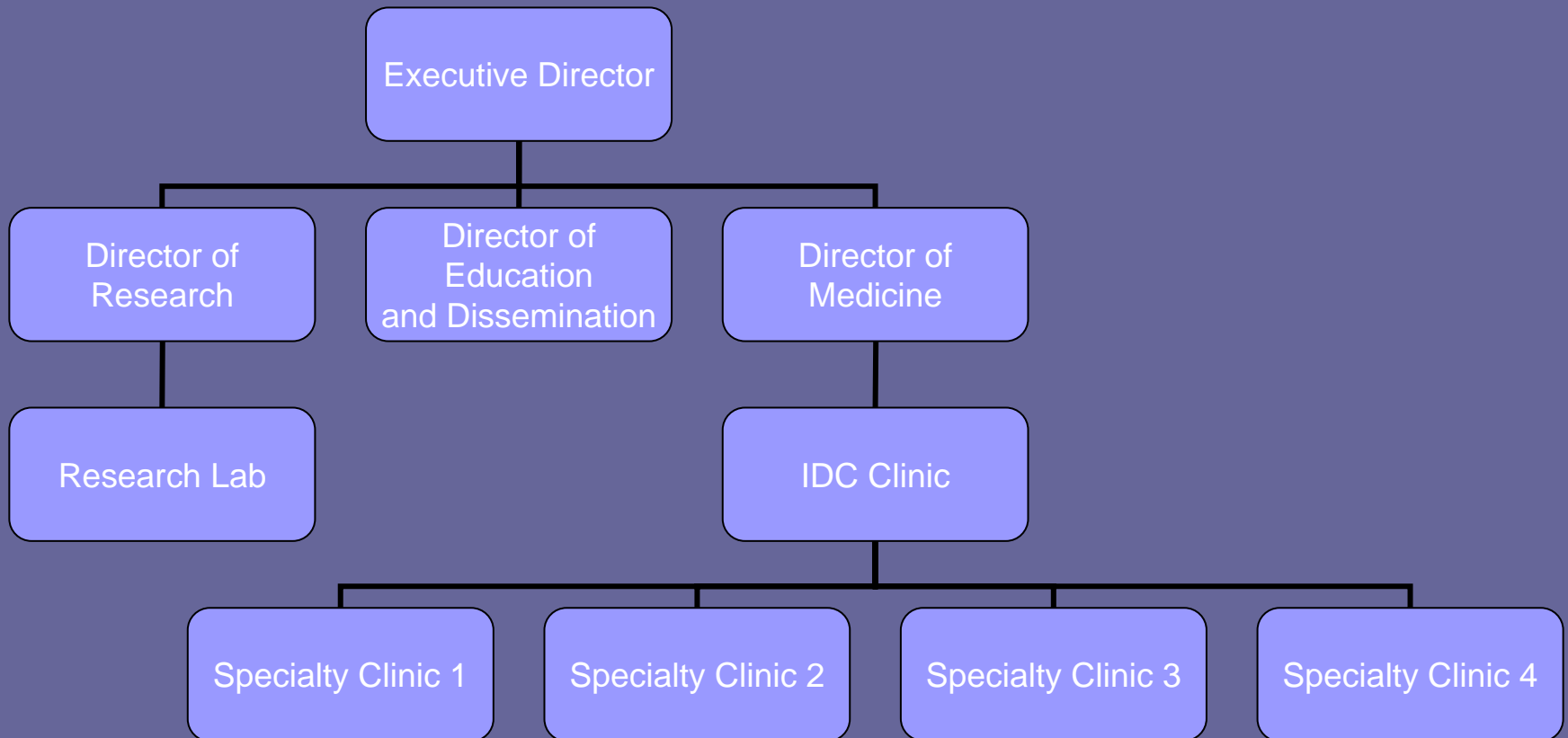
- Provide evidence-based scientifically driven care
- Generate effective interventions that can be replicated across the country
- Institute standardized diagnosis, specialized services, long-term follow-up, and family support
- Foster exchange programs between US and Romania

Institute Concept

Training and Dissemination

- Train community professionals in assessment and evidence-based treatment methods
- Educate policy makers and parents
- Create web-based tools and parent help-line
- Host bi-annual integrated conference

IDC Organizational Structure



Impact and Challenges

- Impact
 - Promote healthy development of all children in Romania, not just those living in adverse circumstances
 - Train new generation of professionals to provide clinical services for and conduct research on children
 - Establish institute as a model system for other countries seeking to improve health and welfare of abandoned or disadvantaged children
- Challenges
 - Time and commitment of local and US-based professionals
 - Cooperation of Romanian government and EU
 - Funding

What We Need to Accomplish

- Promote and improve communication between Romanian and US-based investigators
- Seek long-term funding in order to expand scope and promise
- Develop exchange program between US and Romania
 - Professionals
 - Students
- Government “buy in” (i.e., persuade Romanian government to support IDC)