

# Preventing the Loss of Children's Developmental Potential

S Grantham-McGregor and J Habadani

Institute of Child Health, University of London  
and ICDDR,B, Bangladesh

University of West Indies:  
S Walker, C Powell and S Chang

# Use of mothers report for children <2yrs in developing countries

## Advantages

- infants very shy and frequently ill
- need lower skilled person, quick and low cost
- Used in several countries for motor and/or language milestones (Tanzania, South Africa, Nepal)

## Disadvantages

- mothers often illiterate

# MacArthur Communicative Development Inventories: Words and Gestures (Fenson 1992)

---

- Short version for 8-18 month olds
- Recall not recognition
- Vocabulary check list in 19 categories
- Comprehension and expression

# Categories

## Nouns:

- animals/ vehicles/ toys/ food & drink/  
clothing/ body parts/ etc

## Verbs & Sounds

# Piloting stages

1. Open questionnaire:  $n=50$   
11 - 36 mos
2. List of 495 words by category:  $n=98$  in 2 areas  
11 - 19 mos
3. Rank by category and frequency
4. List of 380 words by difficulty and category:  $n=118$   
11 - 19 mos
5. List of 60 words: easy, average and difficult:  $n=40$ ,  
12-18 mos

# Test-re-test (R-values) Over 7-14 Days

---

<u>Scale</u>	<u>12 months n=20</u>	<u>18 months n=15</u>
Comprehension	0.78	0.67
Expression	0.84	0.99

# Stability (r values) From 12 to 18 Months in 179 Children

---

	Comprehension 18 mos	Expression 18mos
Comprehension 12mos	0.56	-
Expression 12 mos	-	0.46

# Correlations Between Language Scores and Parental Education at 18 months

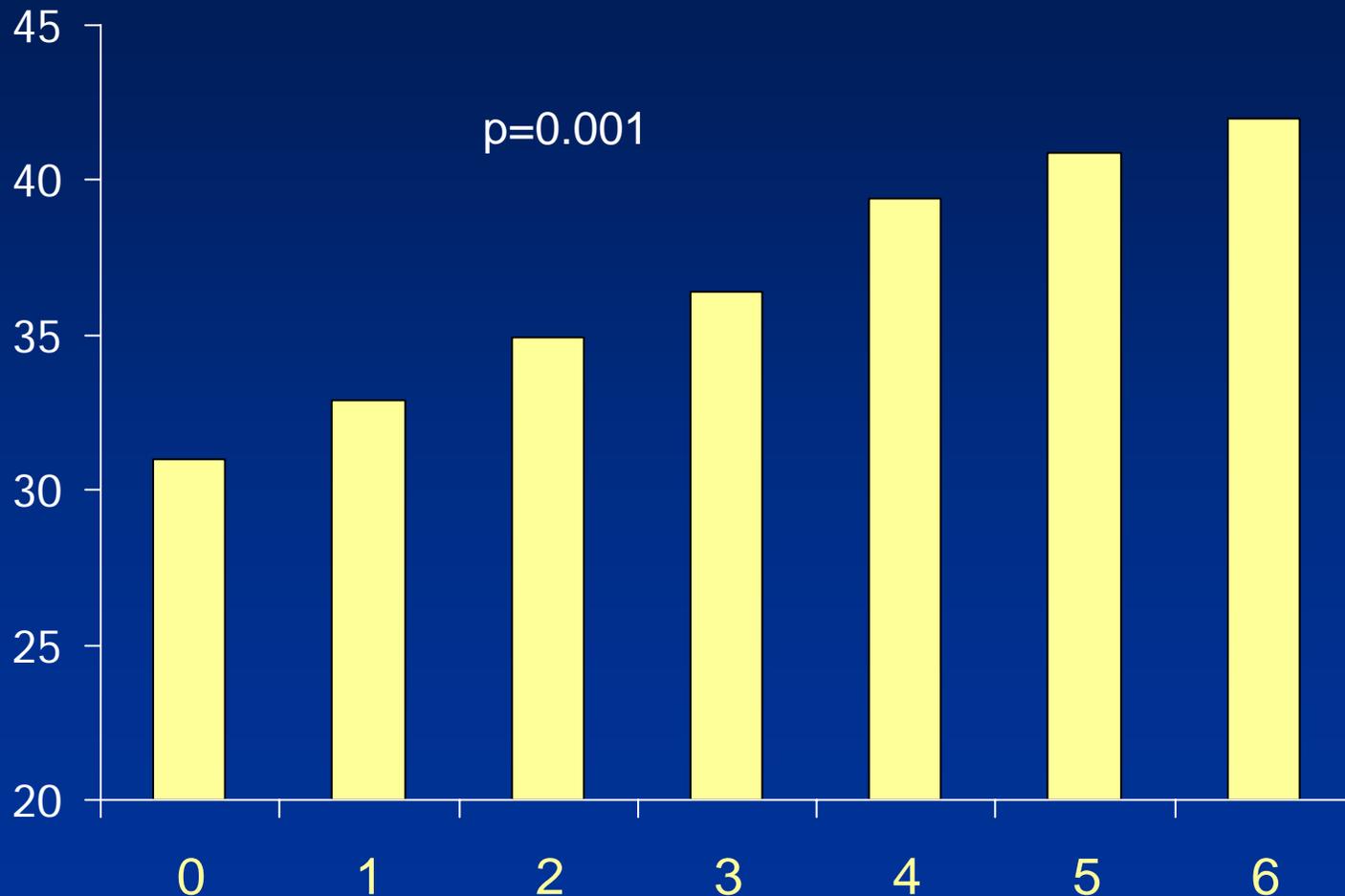
---

	Paternal education r-value	Maternal education r-value
comprehension	0.32 n =1030	0.30 n=1039
expression	0.27 n=1011	0.29 n=1020

# Correlations Between Language Scores and HOME Scores at 18 Months

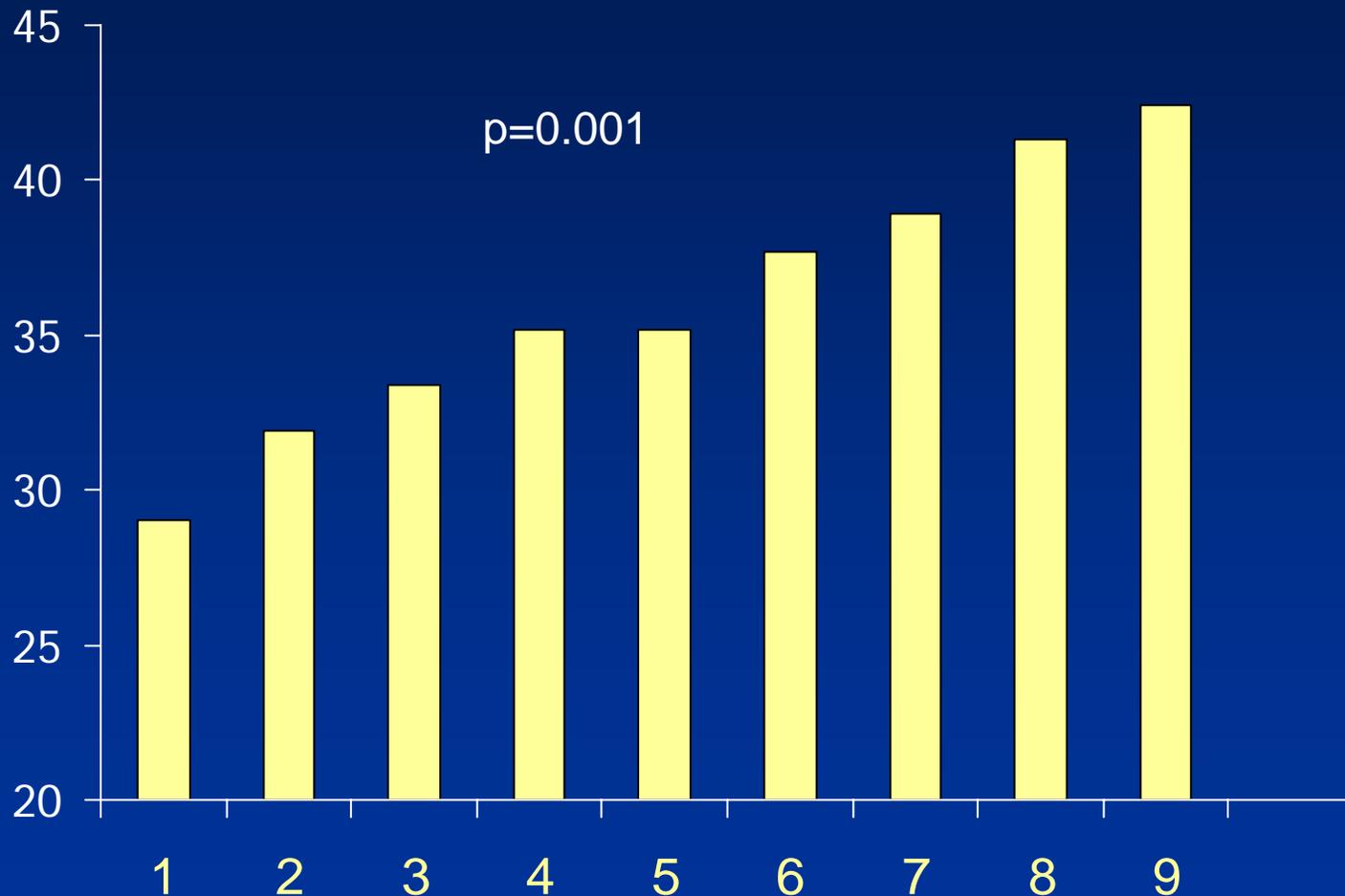
	Number	HOME r-value
Comprehension	1045	0.50
Expression	1023	0.41
MDI	802	0.32
PDI	802	0.24

# Language comprehension score at 18 months by number of play activities (UNICEF) (n=786)



Hamadani et al unpublished

# Language comprehension score at 18 months by number of play materials (UNICEF n=786)



Hamadani et al unpublished

# Conclusion

---

- Mothers report has reasonable reliability and concurrent validity
- Predictive validity pending
- Promising approach

# Millions of children in developing countries fail to reach their potential

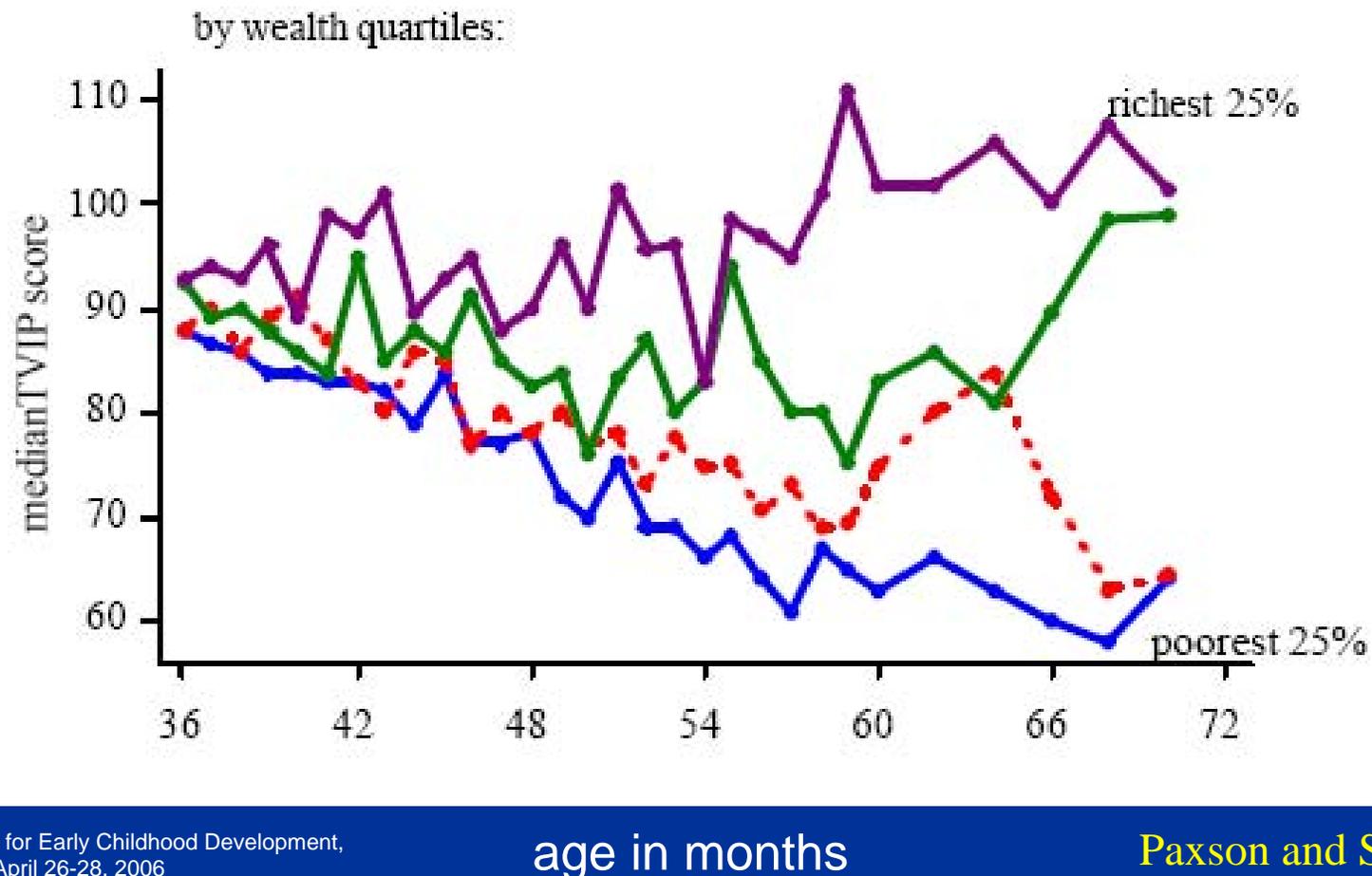
- 174 million stunted - WHO 2006
- 137 million in abject poverty – UNICEF 2005

Stunting is associated  
with poor development at  
least through to early  
adulthood



Same age

# Vocabulary Scores by SES Quartiles in 36 to 72 Month Old Children Ecuador



# Why Home-visiting Programs?

---

- mothers change → sustainable
- siblings benefit
- neighbourhood spread
- lower cost
- better at home <3yrs ?

- Home made toys



- Paraprofessionals



- Focus on mother & child



# 8 studies with different types of children: all showed benefits

---

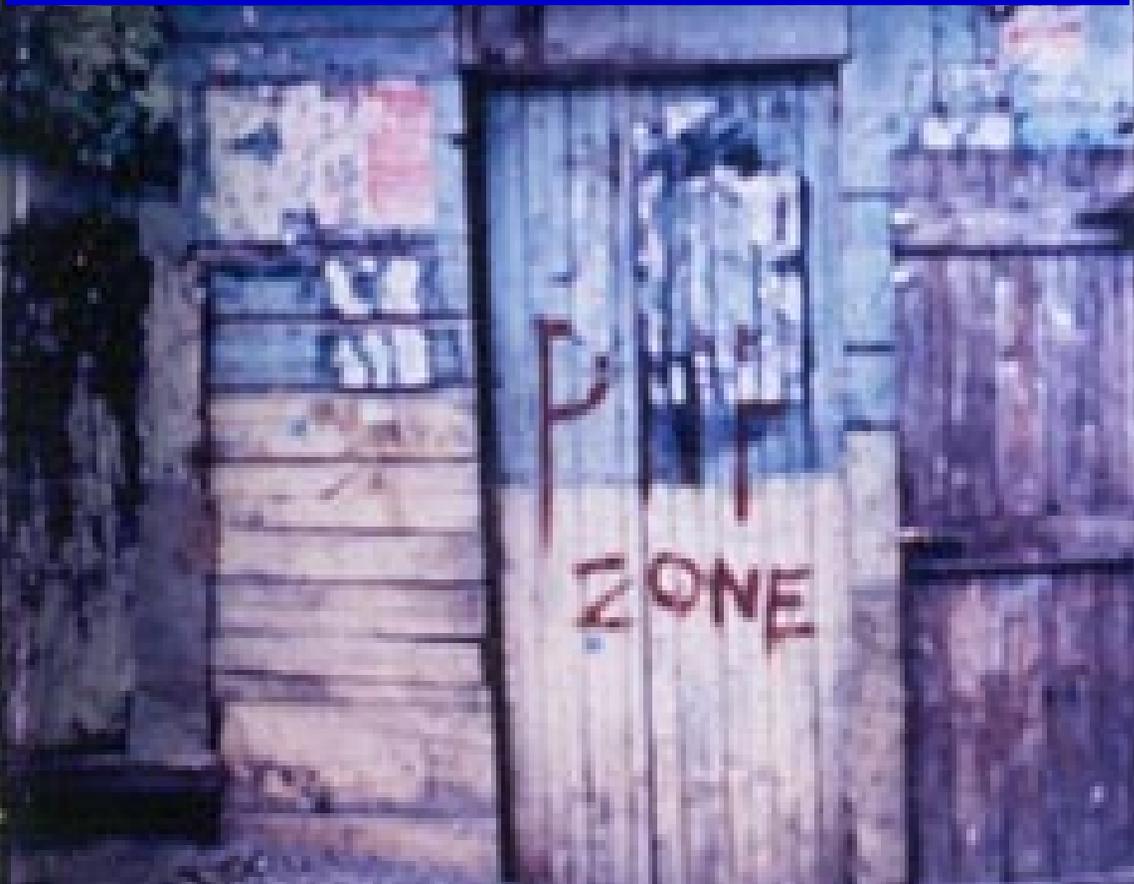
## Jamaica

- 1 with severely malnourished in hospital
- 2 with moderately stunted or underweight
- 1 with low birth weight- term
- 2 with urban poor

## Bangladesh

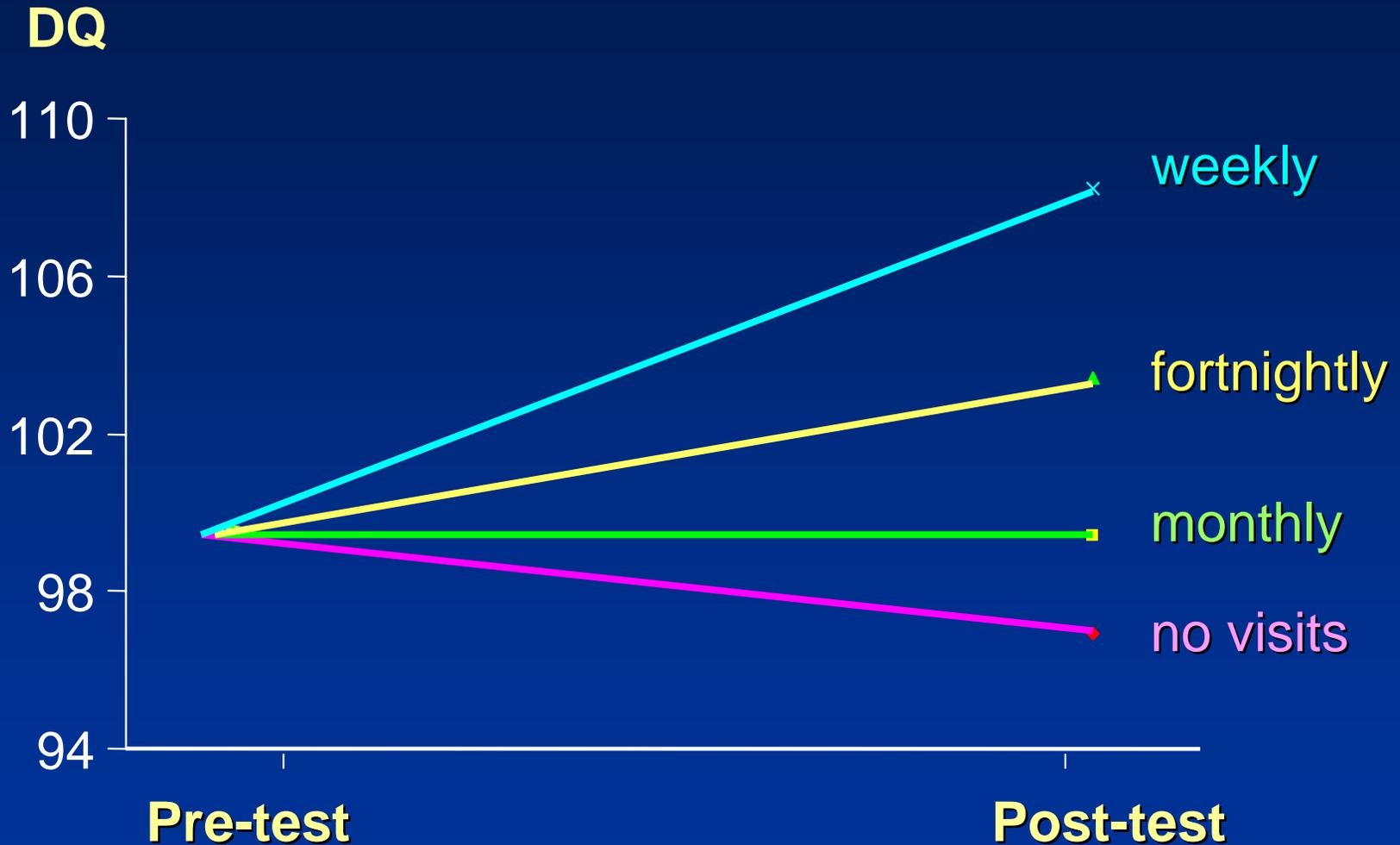
- 1 severely malnourished in hospital
- 1 moderately malnourished-community

# What have we learnt?



Intensity of visits?  
Duration of program?  
Type of child?

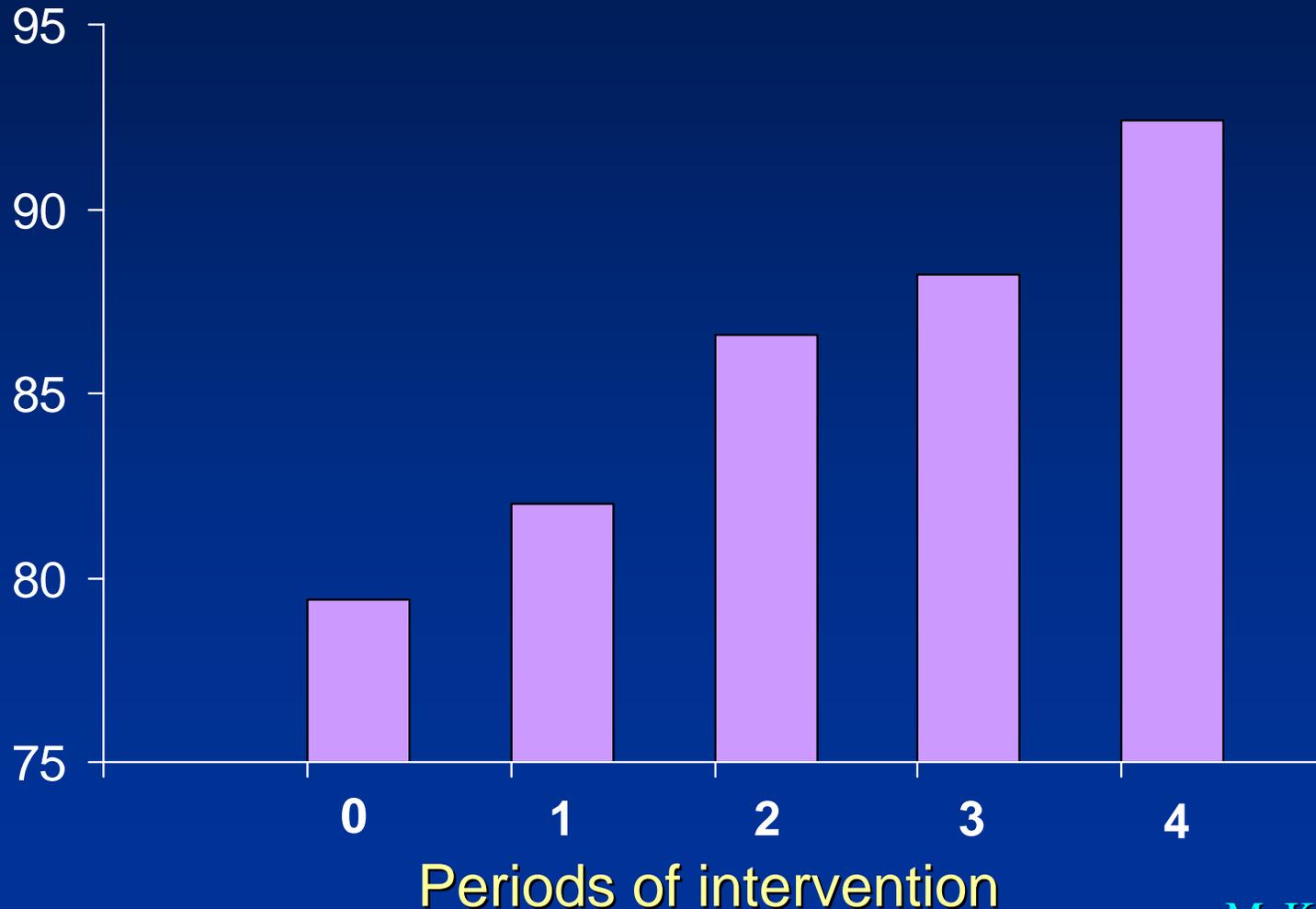
# Effects Of Visiting Frequency in Disadvantaged Children (adjusted for initial level)



Powell & Grantham-McGregor, 1989

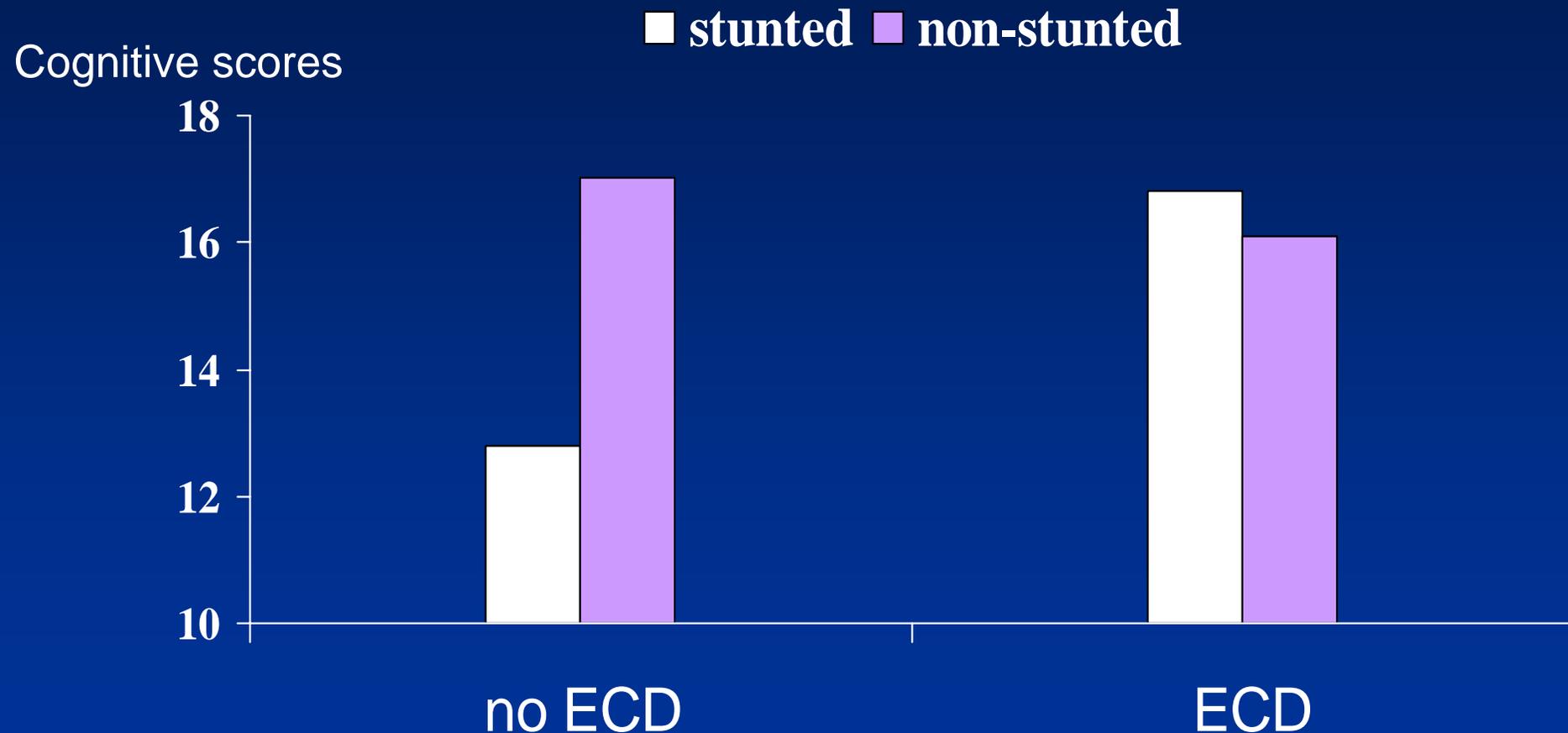
# Cognitive Ability at 7 Years by Duration of Center Based Intervention: Colombia

## Cognitive ability



McKay et al, 1979

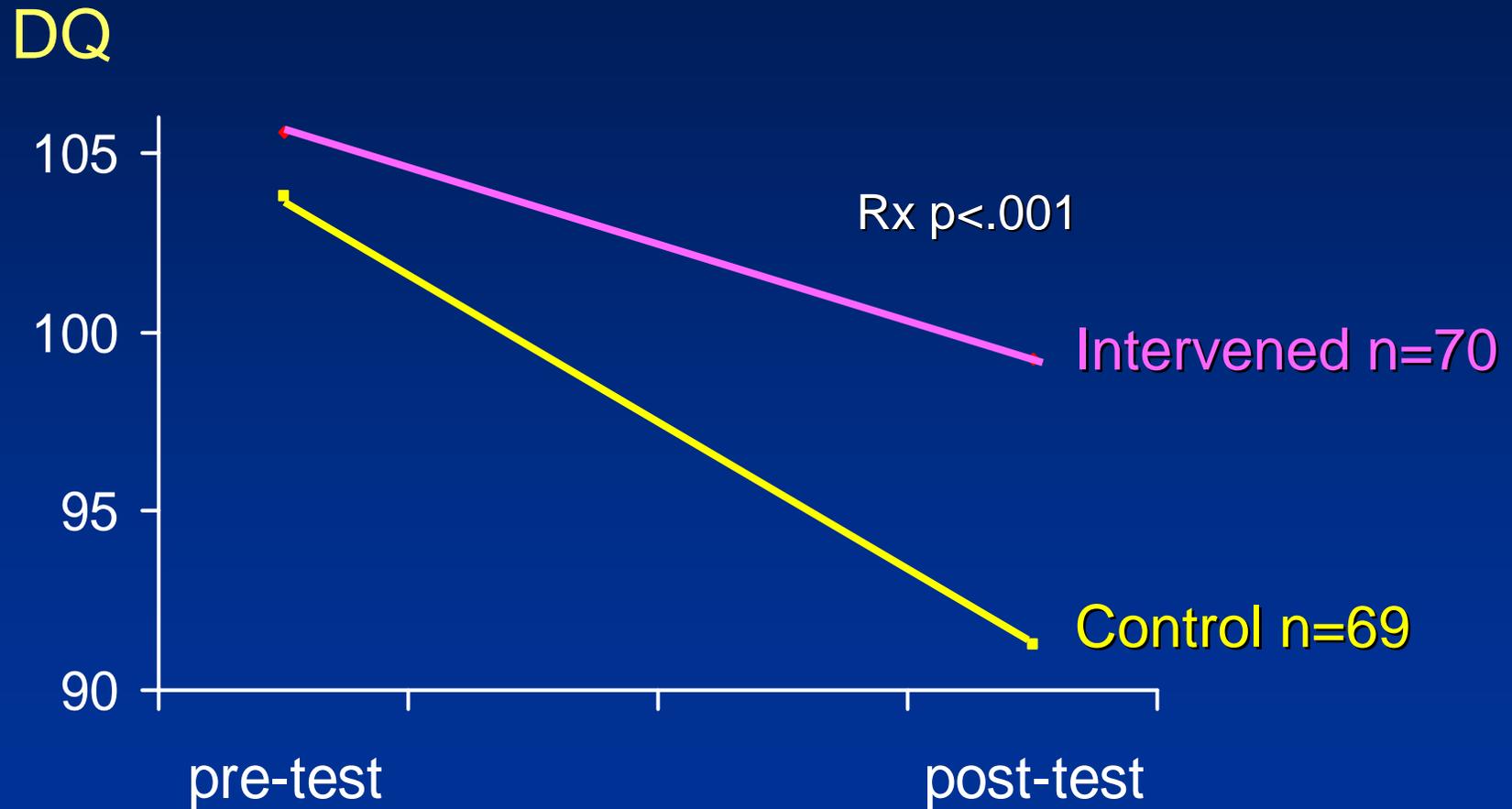
# Effect of Stimulation is Greater in Stunted than Non-stunted Children: Vietnam



Watanabe et al 2005



# Effect of Intervention by Primary Health Care Staff on DQ of Moderately Malnourished Children



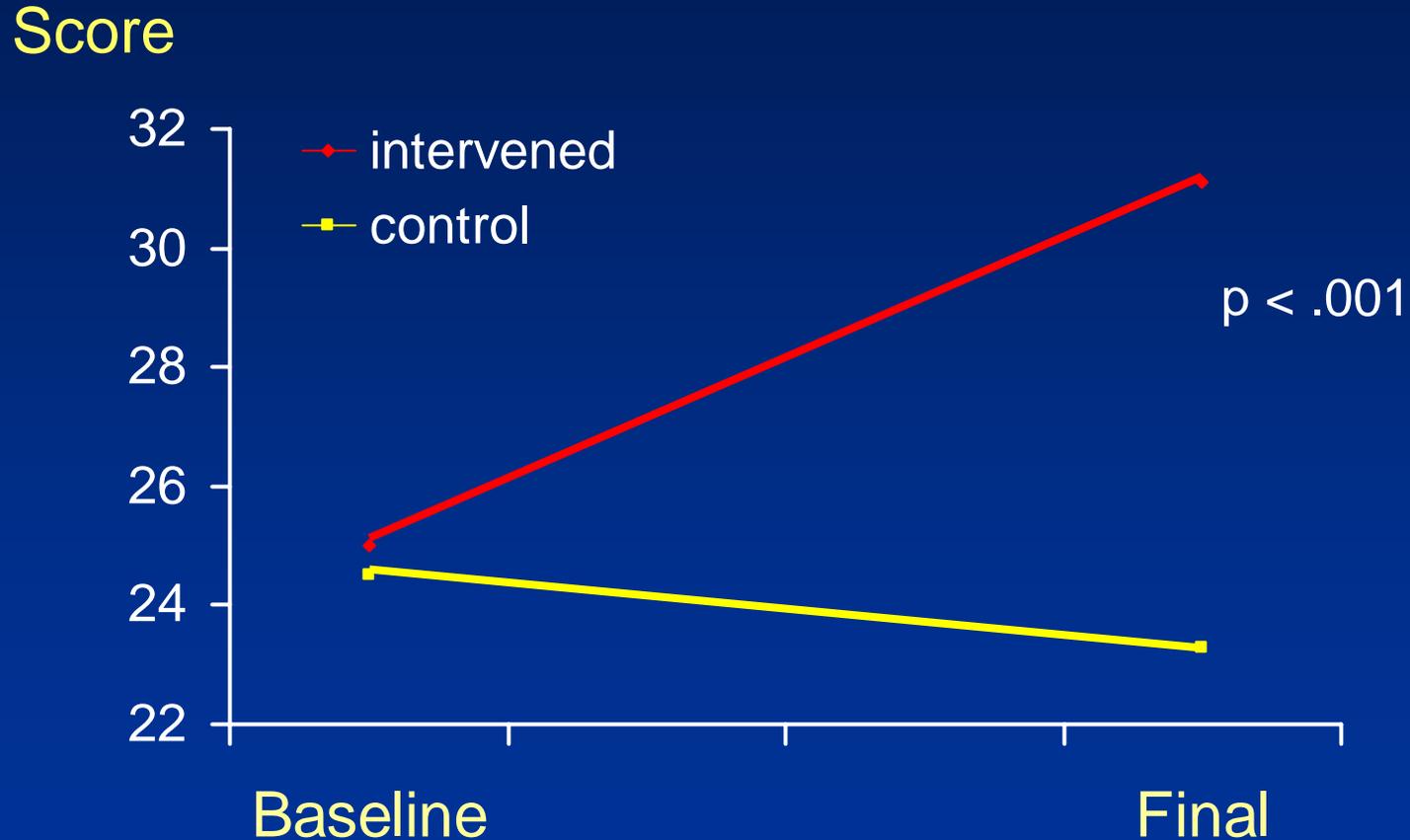
Powell et al, 2004

# Questions

---

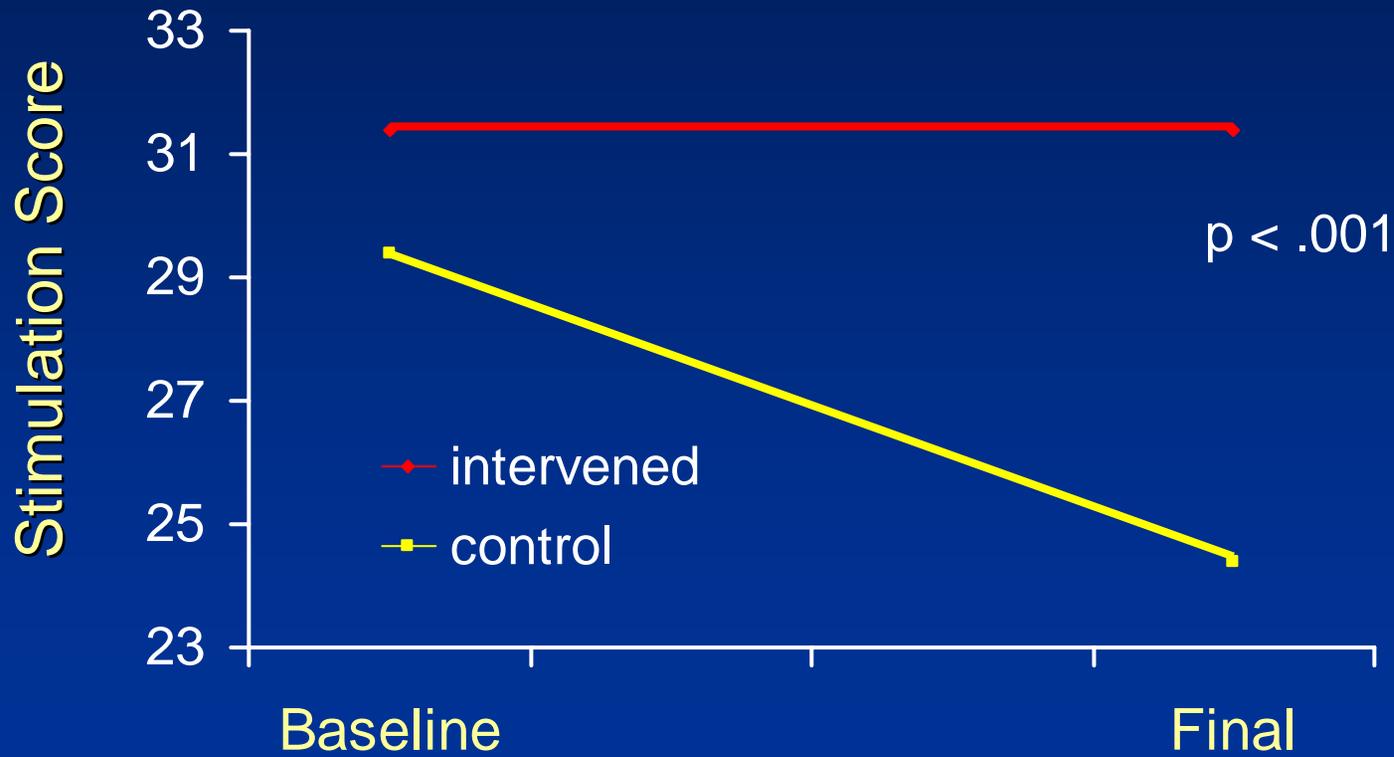
**Do the mothers benefit?**

# Effect of Intervention Mothers Knowledge



Powell et al, 2004

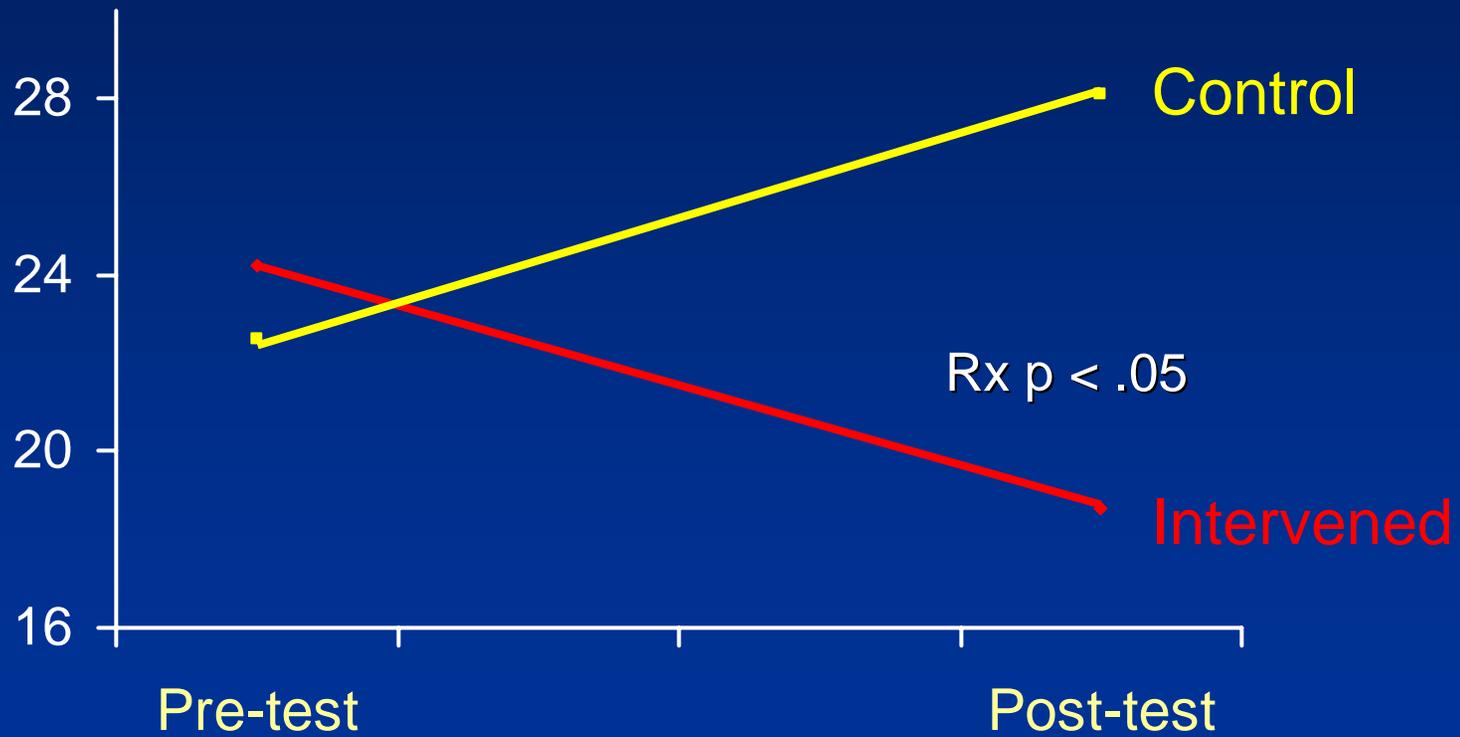
# Effect of Intervention on Stimulation Provided by Mothers



Baker et al, 2005

# Change in Maternal Depression With Intervention

Depression



Baker et al , 2005

# Questions

---

- Does integrating with nutrition bring additional benefits?
- Are benefits sustainable?

# Bangladesh Studies

---

- **Malnourished children showed benefits from stimulation in 2 studies**
- **Greater benefits in children who improved in nutritional status**

(Hamadani et al 2005; Nahar et al 2005)

# Severely Malnourished Children in Hospital

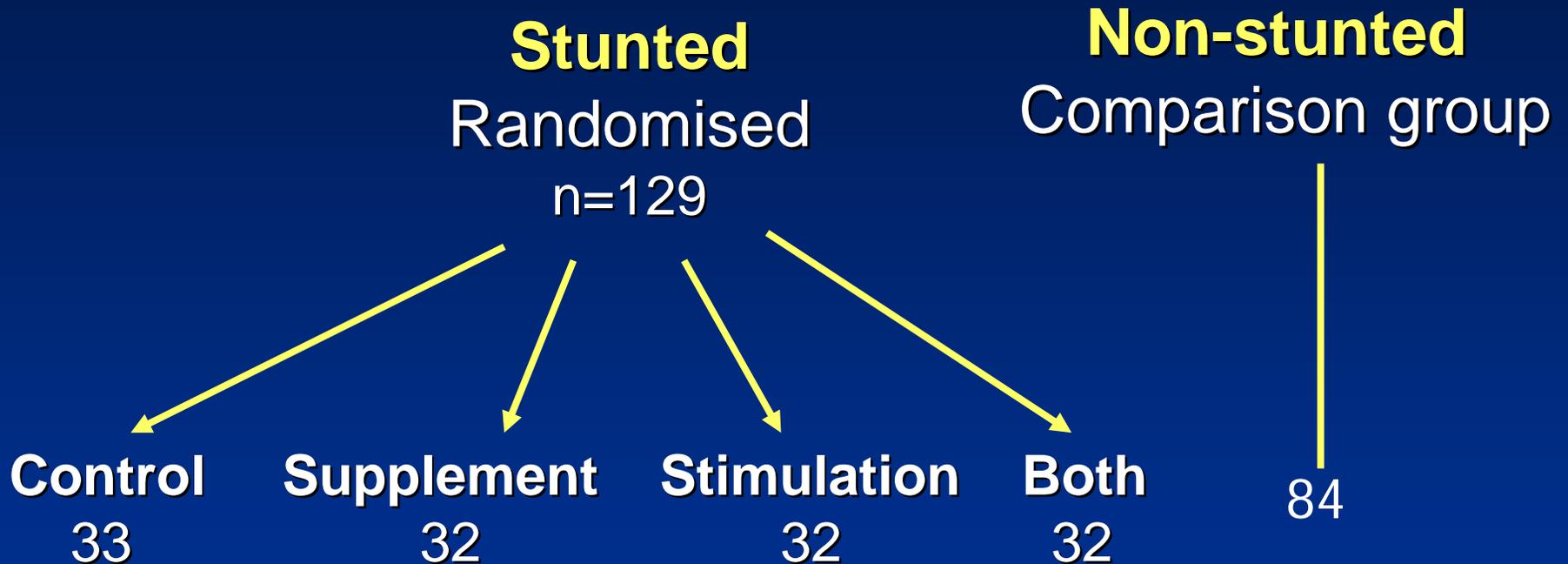


# Bangladesh Community Nutrition Centres



# Jamaican Study Design

---



**Aged 9-24 months**

# Interventions

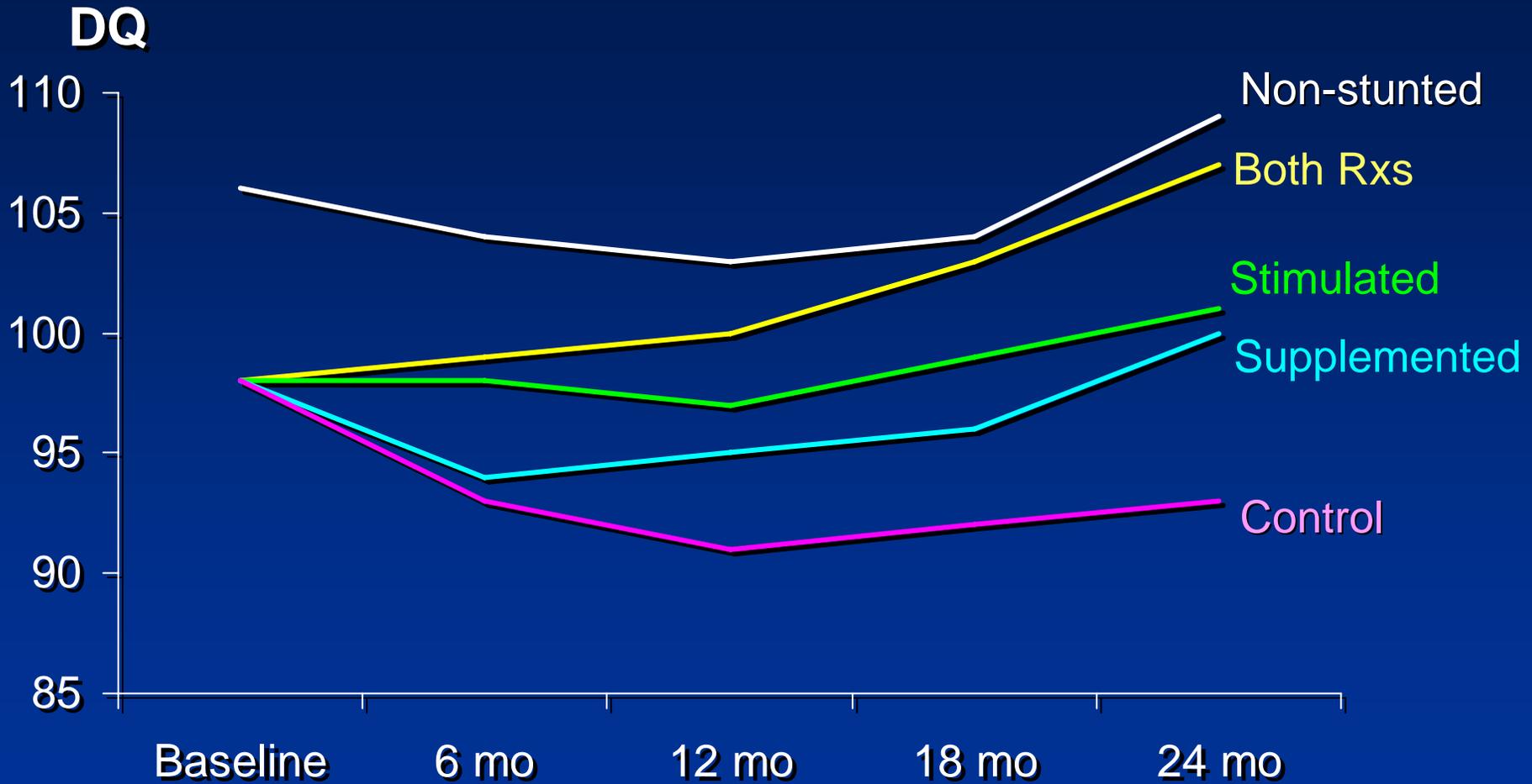
---

2 years:

**Supplementation:** 1kg milk-based formula per week

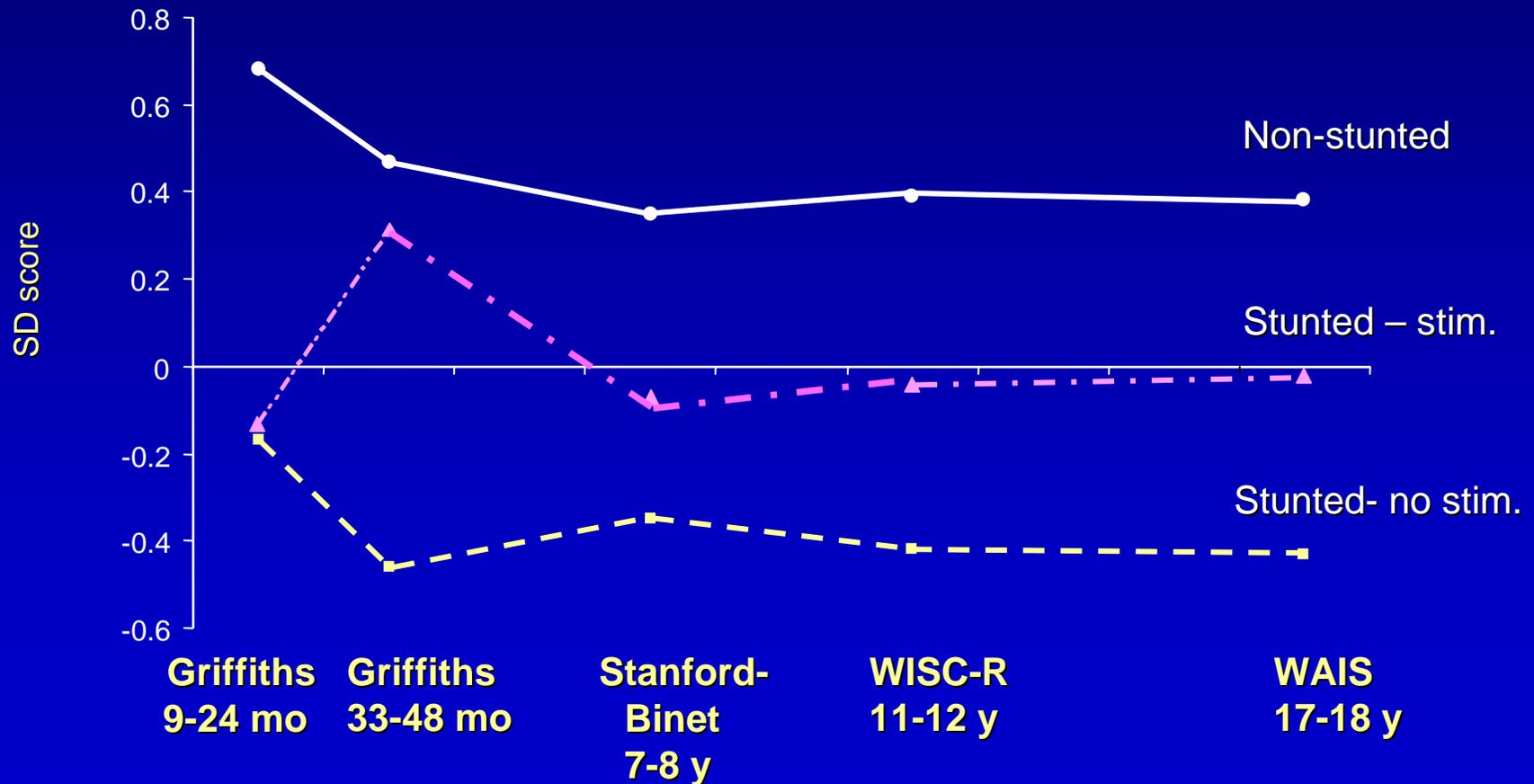
**Stimulation:** Weekly 1hr home visits by community health workers.

# Interventions with stunted Jamaican children: RCT

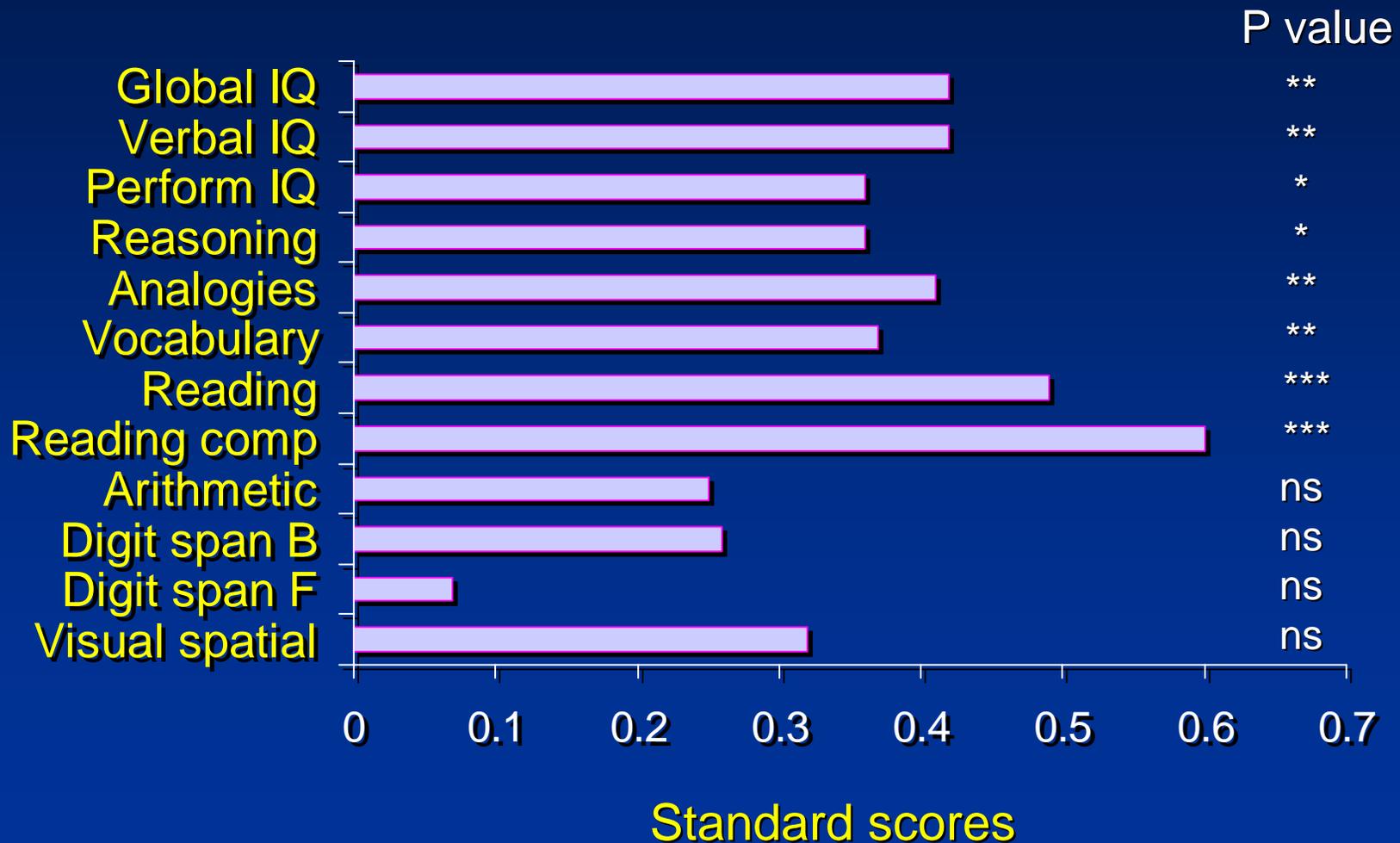


Grantham-McGregor et al, 1991

# IQ of Stimulated and Non-stimulated Stunted Children and Non-stunted Comparisons: Follow up to 18yrs (79%)



# Benefits at 17-18 years From Early Childhood Stimulation in Stunted Children



\* $p < .1$ ; \*\* $p \leq .05$ , \*\*\* $p \leq .01$

Walker et al, 2005

# Summary

---

- Short term benefits to child's development in different types of children and countries
- Short term benefits to mothers' depression, knowledge & stimulation practice
- Sustainable cognitive, education and mental health benefits to 17-18 yrs

# Summary

---

- Short term benefits greater in :
  - more frequent up to weekly
  - longer
  - include nutrition
  - most vulnerable
- Can use primary health care services

# Implications for Future Policy

---

- Urgent need to prevent enormous wastage in individual and national development
- We have sufficient knowledge and ability
- Need political will
- Need to go to scale and EVALUATE