

# **Early Childhood Development: Home Visiting & Nutrition**

**EDePo Workshop**

21<sup>st</sup> October 2009

# Early Childhood Development (ECD)

- Some evidence that ECD interventions in developing countries have both short- and long-term effects
- Some of Sally's work: Jamaican intervention: weekly home visits by community health aides; taught mums to play with child in such a way as to promote development

1991 Lancet - children at 9-24 months

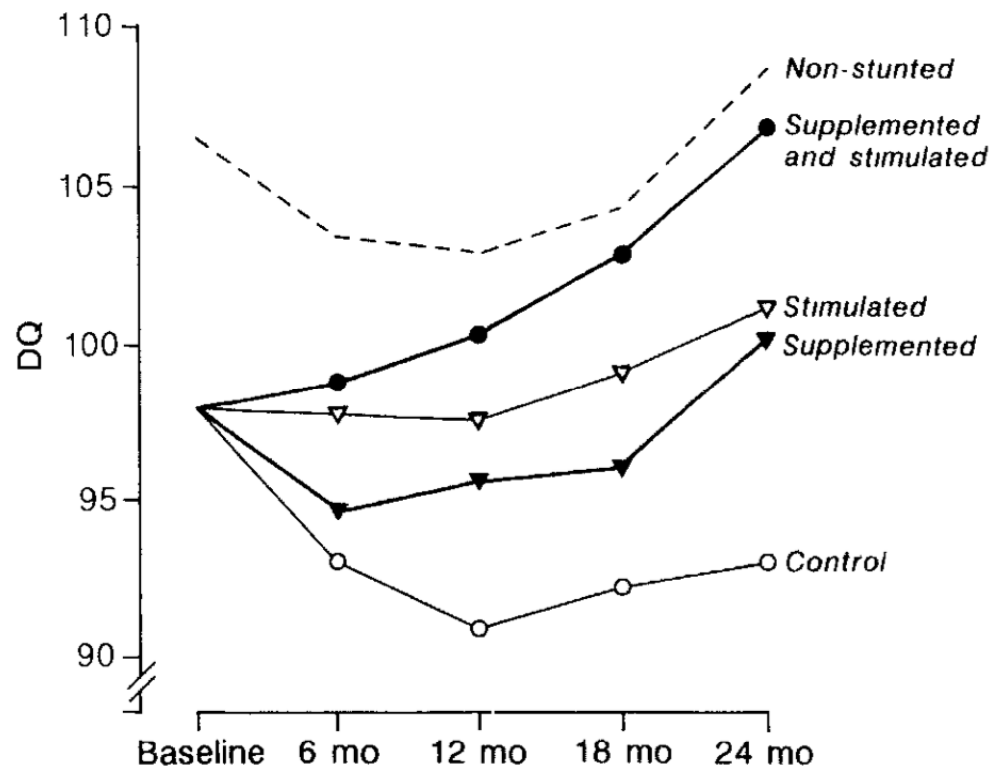
2005 BMJ - followed up same children at 17-18 years

- Not much evidence on importance of nutritional status for cognitive development, nor on interventions that combine nutrition and stimulation

# Original Jamaican Study: 9-24 months

VOL 338: JULY 6, 1991

THE LANCET



Mean DQs of stunted groups adjusted for initial age and score, compared with non-stunted group adjusted for age only.

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# Follow-up of Jamaican study: 17-18 years

## *Effects of stimulation sustained*

**Table 4** Multiple regression analysis of the effects of early childhood stimulation on psychosocial functioning at age 17-18 years

<b>Measure</b>	<b>Mean difference (95% confidence interval)</b>	<b>P value</b>
Anxiety	-2.81 (-5.02 to -0.61)	0.01
Depression*	-0.43 (-0.78 to -0.07)	0.02
Self esteem	1.55 (0.08 to 3.02)	0.04
Antisocial behaviour*†	-0.11 (-0.44 to 0.23)	0.53
Attention deficit	-3.34 (-6.48 to -0.19)	0.04
Cognitive problems or lack of attention	-1.07 (-2.79 to 0.65)	0.22
Hyperactivity	-0.20 (-1.57 to 1.17)	0.77
Oppositional behaviour	-1.64 (-3.60 to 0.32)	0.10

\*Square root transformation used in analyses.

†Initial weight for height entered in regression.

### *No long term effects of supplementation*

Susan P Walker, Susan M Chang, Christine A Powell, Emily Simonoff, Sally M Grantham-McGregor

# ECD in Colombia

Not much going on...

- FeA (CCT program) has introduced an “ECD component” – annual visit to the municipality; people come to a centre where a talk is given; limited distribution of manufactured toys
- Govt provided childcare centres (hogares comunitarios) - attended at some stage by ~50% of sample; no emphasis on stimulation/developmental play. Approx 12 kids per minder...and she also has to prepare their meals...
- Medellin “Buen Comienzo”

Aside - in our pilot, **no mother** reported reading books/showing picture books to her child in past week

# Nutritional status in Colombia

2005 Colombian DHS - among children <5 in households in the bottom 20% of the income distribution

- 20% are stunted in growth
- 42% suffer from anemia
- 63% of children <2 have consumed food rich in vitamin A recently

Nutrition supplements - bienestarina (mainly protein) provided for all children <2 - but not well-absorbed...

# Our Colombian Pilot

- Setting up an intervention and evaluation by RCT of an ECD, based on the protocol designed by Sally
  - So weekly home visits to mums and their children
- But distinguishing characteristic is that it builds on local resources
  - Home visitors are community-elected representatives who organise educational and social activities (link with the FeA program)

**Aim to have an intervention that is effective, scalable and sustainable in the long run**

- Nutritional supplementation for some children - to identify synergies between home visits and nutritional supplementation on ECD outcomes

# Evaluation Design

- 96 municipalities in 3 geographic areas in Colombia (see map!)
- Small urban municipalities: 5,000 to 50,000 inhabitants
- ~1,400 children 12 to 24 months in ~Jan 2010 (baseline); SISBEN 1&2
- 18 month intervention
- Municipalities *randomly* allocated to 4 intervention groups
  - Home visits
  - Home visits + nutrition
  - Nutrition
  - Control
- Extensive socio-economic, psychometric & anthropometric data collection: baseline and 18 mths later



# Weekly Home Visits

- Implemented by *Madres Líderes*
- 3 MLs per municipality, each to visit ~5 children and their mum (or primary caregiver) on weekly basis. Visits ~1 hr
- MLs trained to implement curriculum (1 week initially, then 1 week a few months later)
- People who train the MLs will act as supervisors/mentors throughout

# Grantham-McGregor Curriculum

- ~150 pages long; laid out on weekly basis (examples later)
- Emphasis on child stimulation/developmental play
  - Songs; solve and guess puzzles, jigsaws; games (follow instructions); role play
  - Teach mums how to make toys with waste materials and other objects around the house/community
  - Introduce words and concepts by turning daily activities (dressing, bathing, etc.) into learning experiences
    - Story telling; naming and labeling; conversation; look at picture books
- Stress importance of praising and positive reinforcement
- Adapted to Colombian environment – familiar songs; pictures and books reflect children's environment

# Grantham-McGregor Curriculum contd.

## Main objectives

- Promote all aspects of child development: motor, cognitive, socio-emotional, language & creativity
- Improve child self-esteem
- Improve mothers' child rearing skills
- Improve maternal self-esteem and perceptions of her role as mother
- Strengthen mother (caregiver) & child interaction/bond
- Improve child readiness for pre-school

# Example of weekly routine: 12 months old, week 3



## 1. SONG

Sign the following song to the child. Remember to act the actions and motivate the child to copy you.

### ROUND AND ROUND

Round and round the garden  
Like a teddy bear  
One step, two step  
Tickle you there

## 2. BABY LANGUAGE

- a. Encourage the baby to do what you say. Choose a simple direction, e.g. “clap hands” and say this while you do the action. Get the baby to do the action at the same time  
Ask mum what other simple actions (“bye- bye”, “up-up”) baby can do. Get her to teach baby one at a time
- b. Encourage mum to label baby body parts when bathing him/her

## 3. STACKING 3 BOTTLE TOPS

Materials: Top halves of 3 round plastic bottles same size  
Objective: Baby to stack bottle tops and understand on top of

Directions: Allow baby to become familiar with materials by playing with them. Show baby how to stack the bottle tops by placing one on top of the other. Demonstrate and guide baby’s hand until baby can stack them alone. Don’t expect baby to stack tops immediately. Talk about what you and baby are doing as you play.

# Example of weekly routine: 24 months old, week 1

## 1. LANGUAGE: BODY PARTS

First you label and get child to point. Then Help child to label. Then let child label without help.

Teach large parts and face first, then small parts. When using doll, talk about doll's body parts.

## 2. SORTING & MATCHING

Materials: Stenciled pictures of a fork, knife, comb and cup. (Ask the mother to lend you these same objects from the home).

Objective: Child to match objects to the picture of that object.

Directions: Place the four pictures and have the child name them. Then, give one of the objects (i.e. the cup) to the child and get the child to place the objects on the matching picture. Do this for each object. It might be necessary to guide the child at first.

## 3. DOLL AND BED

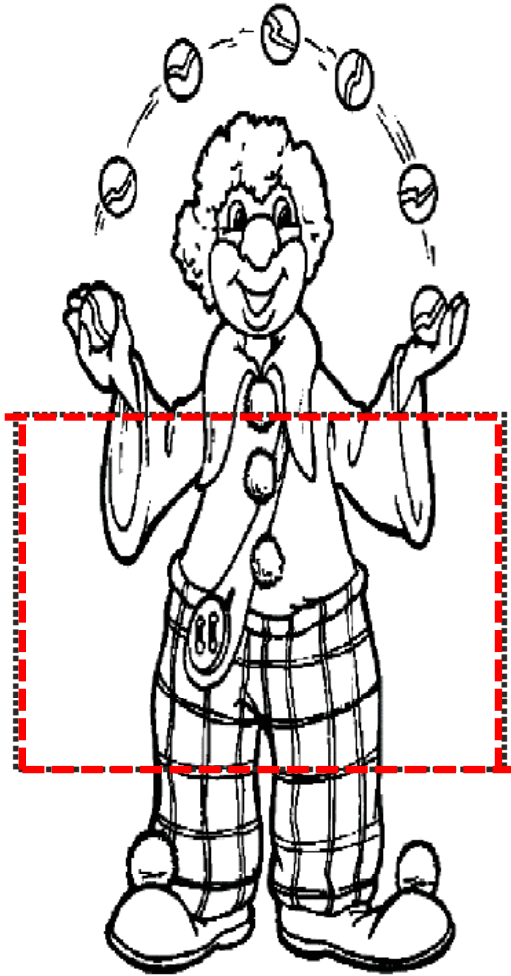
### – NO CLOTHES

Materials: Large stuffed doll, box, 2 sheets, pillow

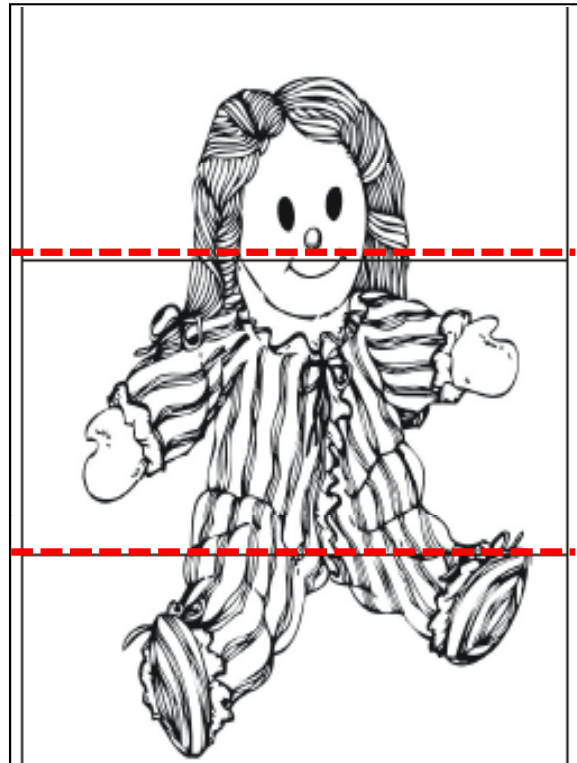
Objective: Child to play with doll and name body parts. Child to talk about activities with doll.

Directions: Repeat month 14 asking child to name his/her body parts and those of the baby (eg. "My nose, my hand, baby nose, baby hand"). Have child put doll to bed. Encourage child and mother to talk about doll and what she/he is doing. Eg. "baby sleep. Baby is cold, pull up the sheet", etc.

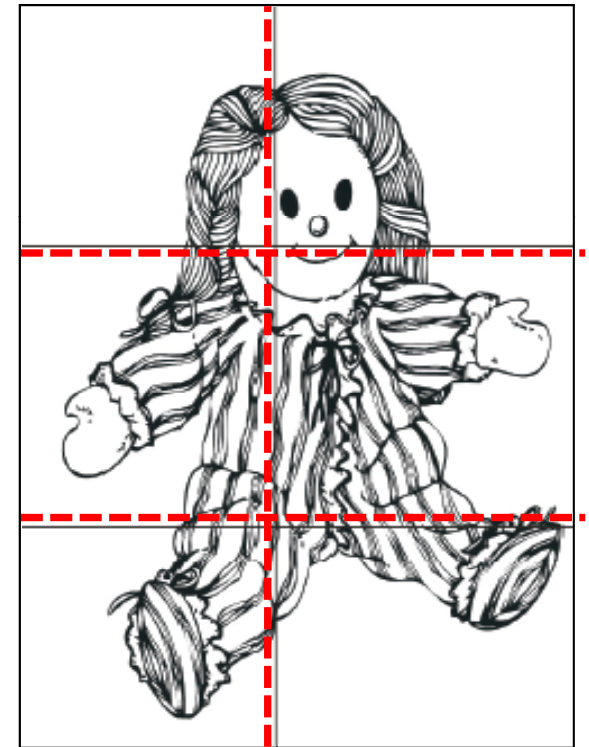
# Examples of materials used



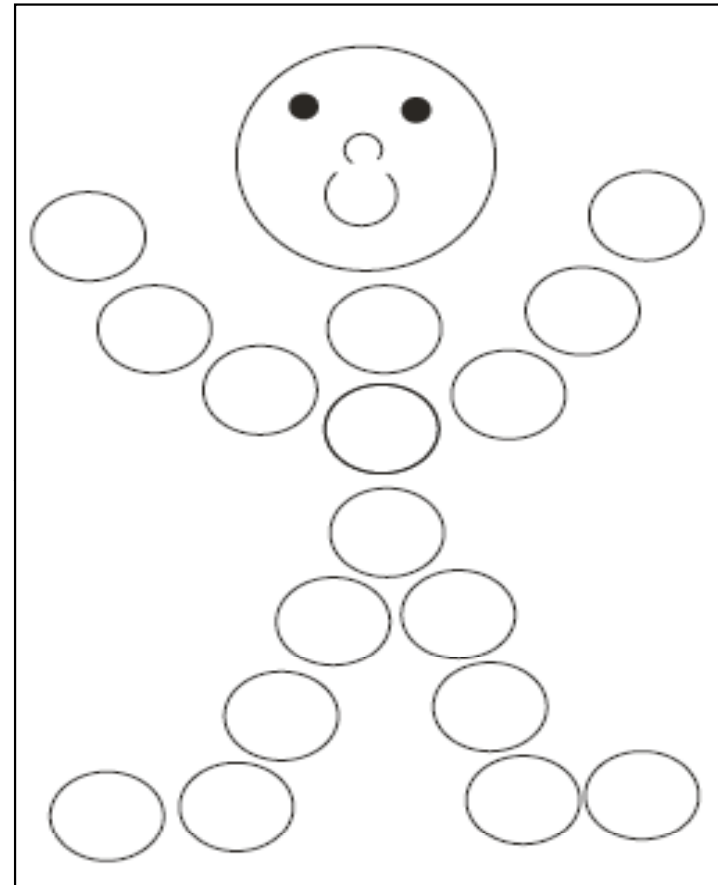
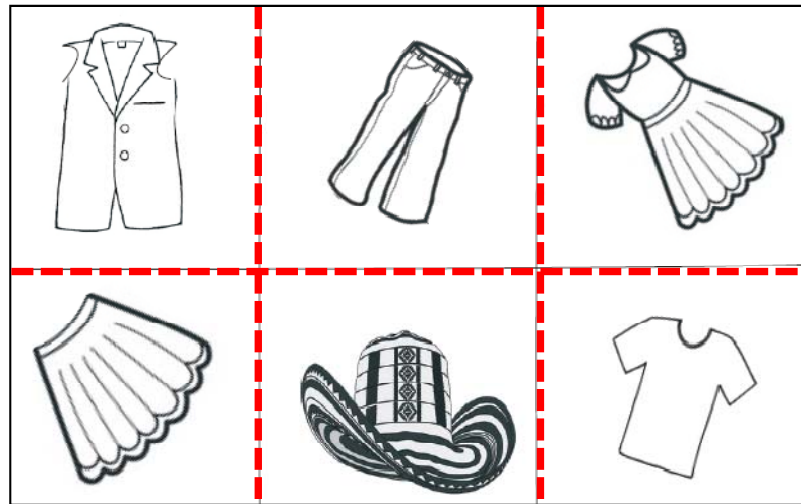
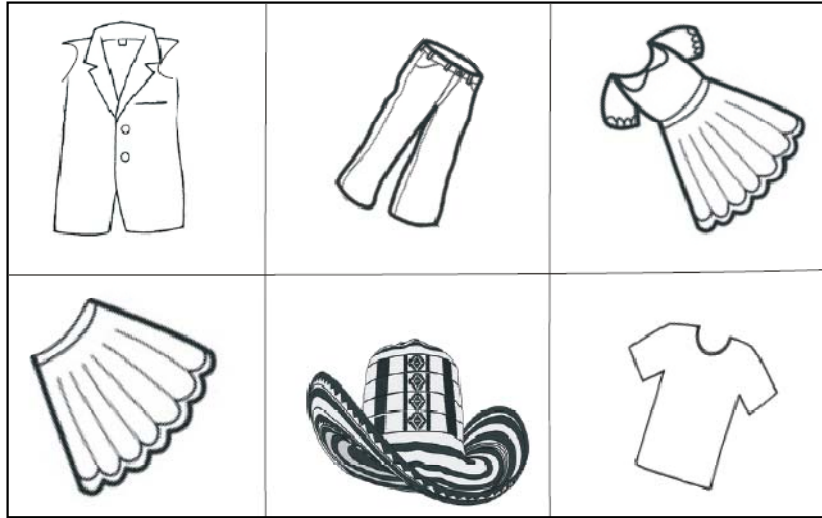
Clown Puzzle  
(from 21 months)



Doll Puzzle  
3 pieces (from 31 months)  
6 pieces (from 41 months)

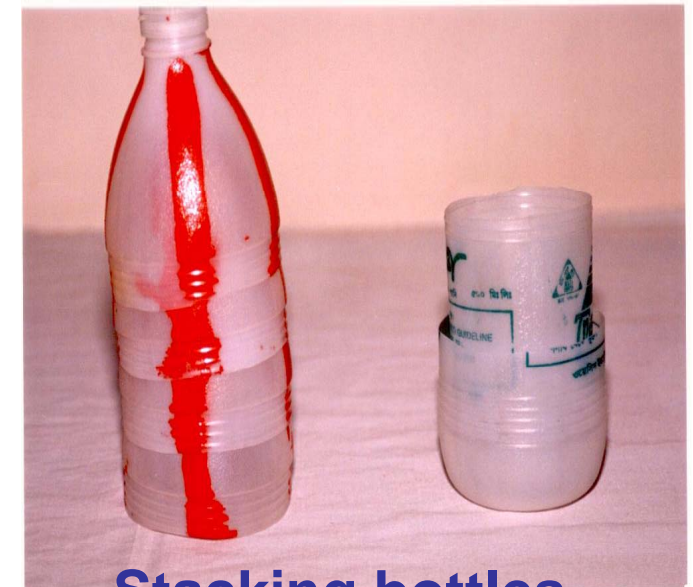
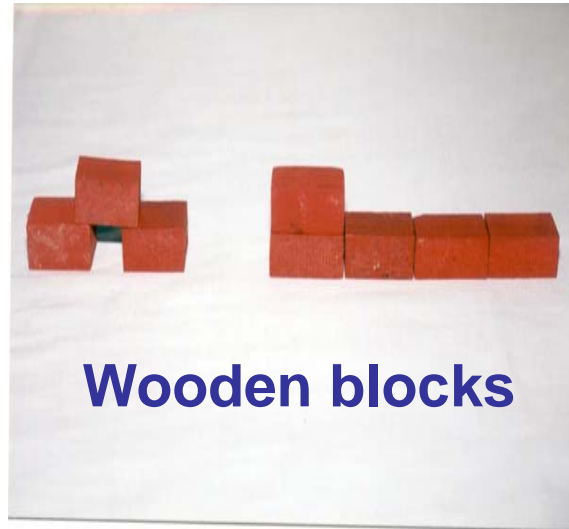


# Memory Lotteries – Sorting & Matching (from ~30 mths); Patterns with Bottle Caps



Bottle Top Man

# Some homemade toys





# Some books

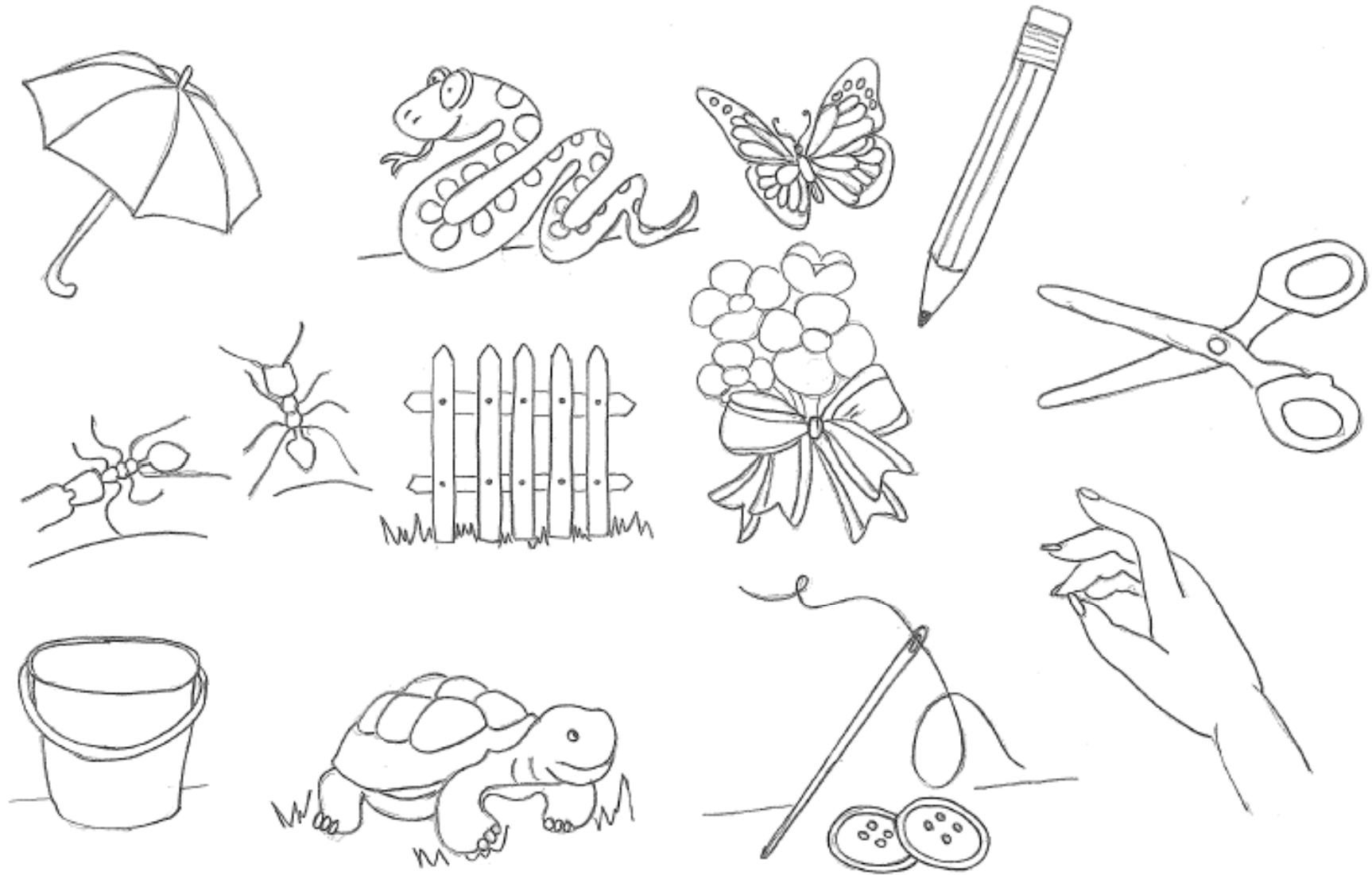


Printed books

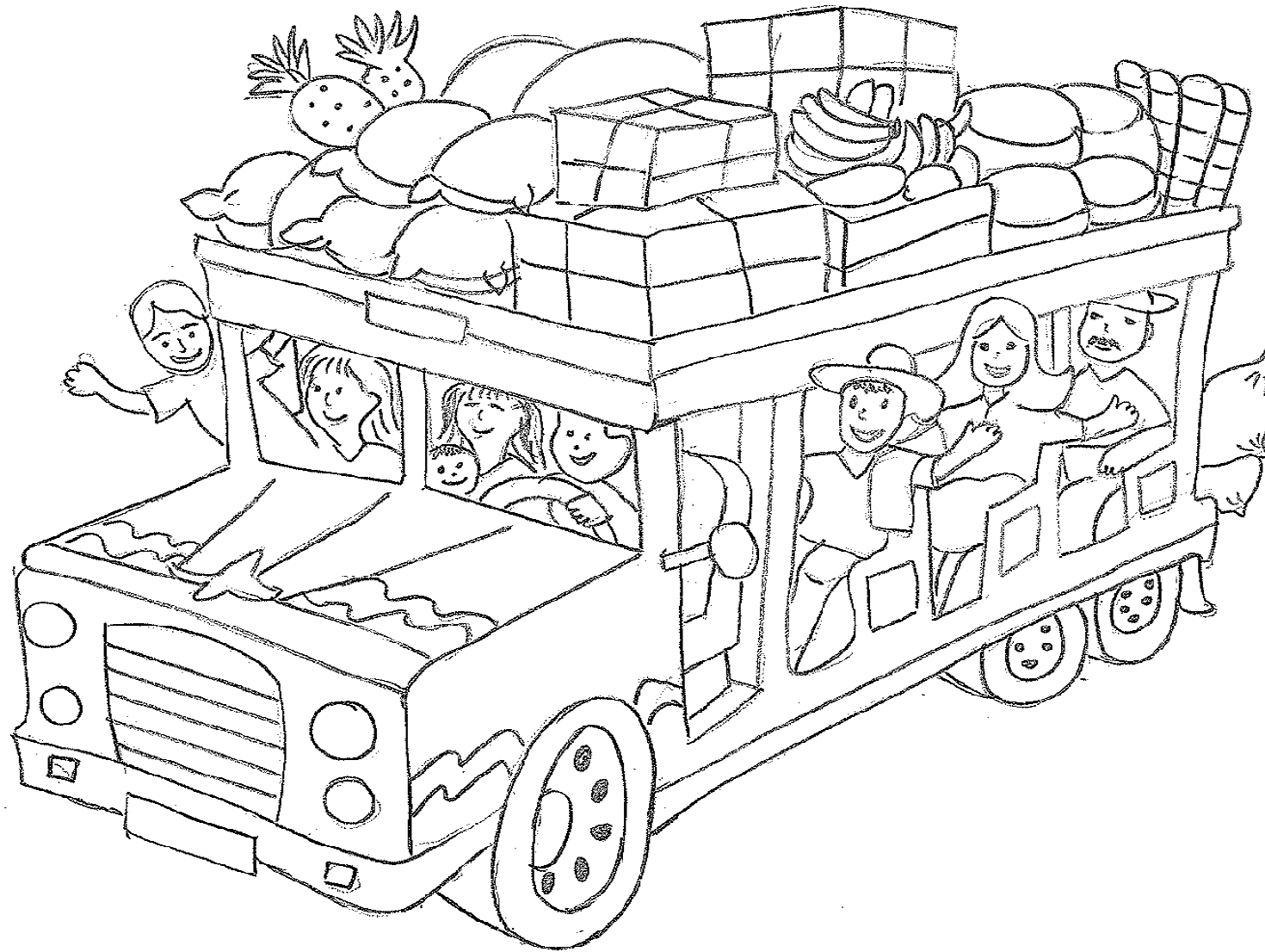


Made books

# Pictures to talk about



# More pictures to talk about



# Nutritional Supplementation

- Provide daily micronutrient supplementation - “sprinkles” - to a subset of targeted children (24 villages)
- Colorless, tasteless powder sprinkled on semi-humid food (rice, for example)
- Provides iron, zinc and vitamins A and D
- Provide supplements to all children <5 in household to avoid reallocation
- ML to deliver the supplements to the house and monitor intake

# Sprinkles



Purchased from India and on their way to Colombia – finally!

# Data and Measurement

- Extensive socio-economic, psychometric and anthropometric data collection at
  - baseline (Jan - March 2010)
    - ~1,400 children ages 12 to 24
  - after 18 months (June - Sept 2011)
    - ~1,400 children ages 30 to 42 months
- Interviews ~2.5 hours...
- Phase-in the intervention (and the training of the home visitors) as baseline surveys are being conducted

# Child Data

- Motor and cognitive development:
  - Bayley Scales (these explain the boxes that were sitting around the office for weeks...!)
- Socio-emotional development
  - Bates Temperament test
- Language Development
  - McArthur test
- Nutritional Status
  - height, weight, haemoglobin (blood prick), morbidity
- Food Intakes (target child and children <6 in hh)
- Detailed child care arrangements & time use (target child and children <6 in hh)
- Hopefully birth weight and breastfeeding history

# Mother's Data

- General household socio-economic characteristics
  - Education, labour supply and time use
  - Reproductive history
  - Health condition
  - Height, weight and haemoglobin (blood prick)
  - Aversion to inequality and risk
  - Depression (CESD)
  - Knowledge on parenting
  - Parenting practices & the home environment
  - Peabody – maternal IQ
- 
- We will also collect data on **home visitors** such as education, health, knowledge, risk aversion...
  - Will also keep a record of home visits; record of sprinkles intake