

Book-sharing benefits: theory, evidence and practice

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NAIMH November 2021
Part 2

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Inequalities in child education and language are a major social problem

- Children from low SES families have poorer educational outcomes than those from high SES families
- Differences in language are apparent by 18 months
- E.g., by 24 months there is a **six month gap** in language processing skills (*Fernald et al, 2013*)
- Such early deficits persist through development (*Bornstein, 2014*)

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Development takes place through relationships

Primary intersubjectivity 5-12 weeks

active mouthing-'pre-speech'



hand and finger gestures



smiles and positive vocalisations



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Secondary intersubjectivity and Joint attention- 9 months

Parents support infant experience of the environment



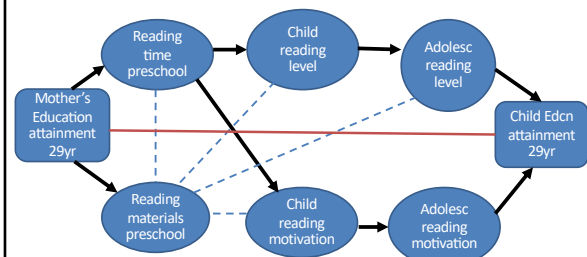
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Which aspects of parenting are associated with child educational outcome?

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Parent reading to child in early development may play a special role in long-term outcome

a 28-year longitudinal study
(Gottfried et al. 2015 Parenting: Science and Practice)



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Amount of home reading exposure and brain activation in preschool children listening to stories

(Hutton, et al, Pediatrics, 2015)

3-5 yr olds – recorded fMRI while listening to stories

Home reading environment assessed

Controlling for SES, **higher reading exposure** was positively associated with neural activation in the left sided parietal-temporal-occipital association cortex, “a hub region supporting semantic language processing”

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Quality of reading: ‘Dialogic Reading’, or ‘Book-sharing’

- Evidence that Dialogic Reading, or Book-sharing is more advantageous than simply reading to child (Whitehurst, 1980’s), particularly when using **picture books**

BUT

- Low SES families are not only less likely to read overall to their children than higher SES, but when they do, they are less likely to use dialogic practices

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Quality of shared reading and brain activation during story listening in preschool children

(Hutton et al, J Pediatrics, 2017)

Low SES 4 yr old girls listened to a story during fMRI recording

Mothers and daughters video-recorded sharing a picture book

DBS quality was strongly correlated with activation in left sided brain areas supporting language, socio-emotional integration and working memory

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Key elements of Dialogic Book-sharing

It is NOT:

- Reading the words
- Correcting the child
- Instructing the child

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Instead, it involves:

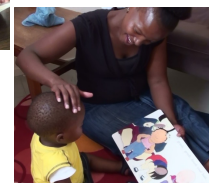
- Following the child’s interest
- Elaborating on what interests the child
- Encouraging the child’s participation
- Making links between the content of the book and the child’s experience



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Key Behavioural Features

- Gaze following
- Pointing
- Animating



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Key Linguistic Features

(used more in book-sharing than other contexts, e.g., toy-play)

- Asking questions
- Pointing and naming
- Extending and elaborating
- Using syntactic complexity
- Using mental state talk

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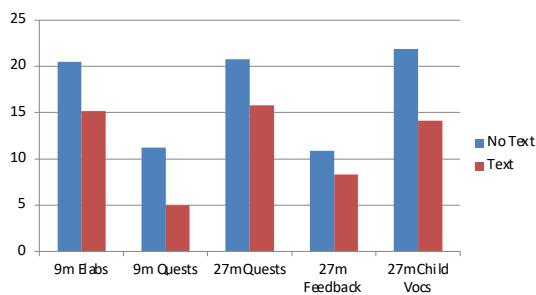
Key DBS characteristics are enhanced when using wordless, or text-light, picture books



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Differences in parent-child 'talk' between picture/text-light books, and books with text

Sénéchal et al., 1995, Early Childhood Research Quarterly



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Why is picture book-sharing so effective?

Understanding iconic forms in picture books - evolutionary roots in primate behaviour and early art

Joint attention features- role of gaze following, pointing, and animation

Linguistic features:-More responsive to child and more conversational when no text to refer to

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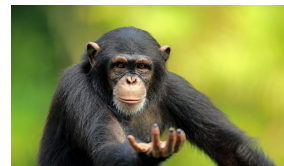
Picture book advantage: development of understanding of iconic forms

- Evolutionary roots in primate behaviour and early art forms
- Evidence from infancy research

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Evolutionary roots of picture book advantage: Ape gestures

Byrne et al. 2017 Animal Cognition; Graham et al. 2018, PLoS Biology



Different ape species use the same 'iconic' gestures to carry same meaning, suggesting long evolutionary history.

Precursors of the spatial arrangement of marks on a surface, as in pictures?

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Evolutionary roots of picture book advantage-Neanderthal art



Hand stencil, minimum 66.7 ka



Scalariform sign, 64.8ka

D. L. Hoffmann et al. Science 2018;359:912-915

Published by AAAS



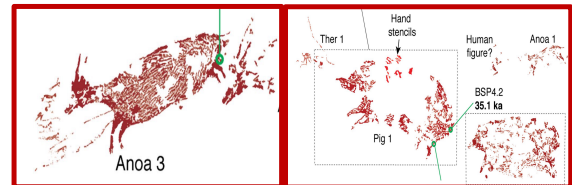
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First homo sapiens narrative art

Aubert et al., Nature 2019

Hunting scene: 44 ka, Indonesia

Human figures gather with sticks/ropes to drive prey from cover



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Infants see pictures as representations of the world:

Identifying a novel referent

(Preissler & Carey, 2004)



A. Line Drawing (whisk) used in training



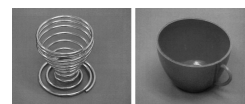
B. Real Three-Dimensional Object (whisk)

Even though label training done using drawing, when given a choice, 18 m and 24 m olds select real object to match label, not the drawing

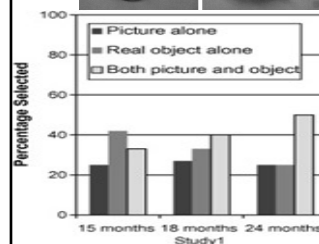
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Finding the 'blicket'

(Ganea et al., 2009 J Exp Child Psych)



Children more likely to select real object than picture alone, even if trained only on the picture



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Joint attention behaviours in book-sharing: gaze following and pointing



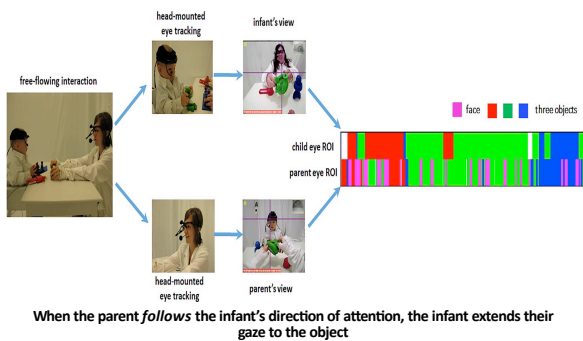
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Effects of gaze being followed

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The Social Origins of Sustained Attention in One-Year-Old Human Infants

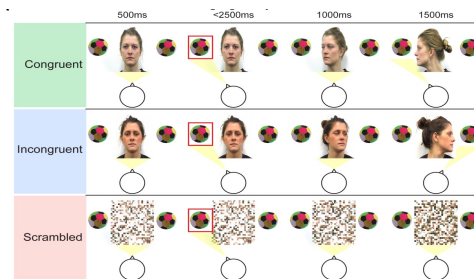
Yu and Smith, *Current Biology*, 2016



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Neural effects of gaze being followed

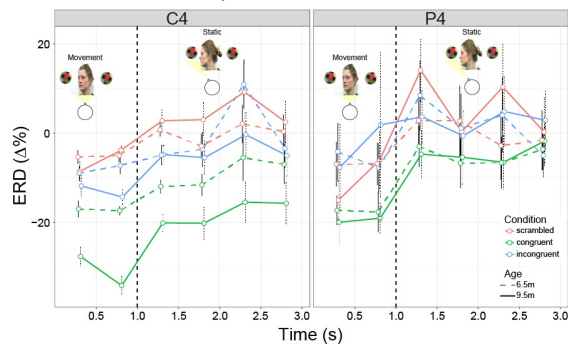
Effects of infant's own gaze being followed at 6.5 and 9.5 m on attention processing, using EEG (Rayson et al. 2019, *Dev Cog Neurosci*)



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Infant EEG responses to gaze being followed

Rayson et al., 2019



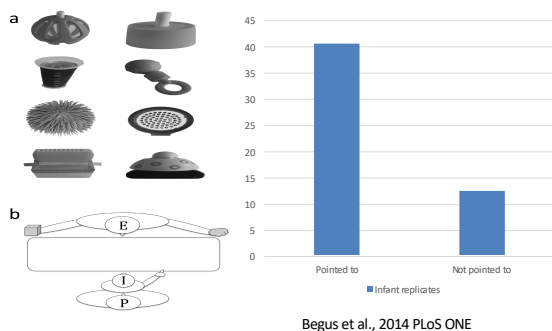
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Effects of infant pointing being followed

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Infants Learn What They Want to Learn: Responding to Infant Pointing Leads to Superior Learning

% objects on which 16 month-old replicate action



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Benefits of animation

Infant attention to a joint focus and word learning are better when adults use synchronous gestural animation and vocalisation

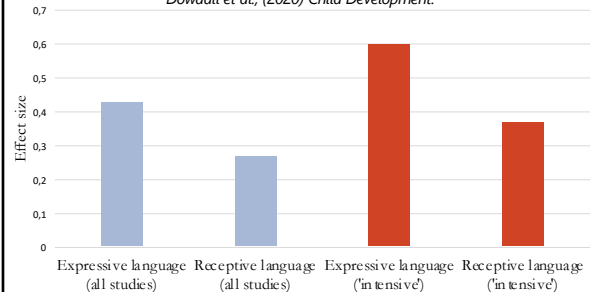
(Gogate & Bahrick, 1998; Daum et al., 2013; Matayaho et al., 2014; Gogate et al., 2006)

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Training parents in book-sharing: evidence for effectiveness

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Recent meta-analysis of effects of book-sharing on child language (19 RCTs), including intensiveness (over 60 minutes)

Dowdall et al., (2020) *Child Development*.

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Our DBS Programmes

see: www.mikhulutrust.org

- For families with 10-20 month olds
- For families with 20-30 month olds
- For families with 30-60 month olds
- For ECD workers

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The South Africa context: Khayelitsha

- Poverty, unemployment, crime
- Widening economic gap
- Majority earn less than subsistence level
- Lack of infrastructure & basic amenities



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Randomized Controlled Trial

(Vally et al 2015, JCPP; Murray et al., 2016 JCPP)

- 91 mother-infant dyads
- Infants aged 14-16
- Randomized to either

8-week programme in
book-sharing (n=49)

or

control group (n=42)

(Controls received later book-sharing
training)



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Assessments

At baseline and again 9-10 weeks later

Primary Outcomes:

1. Child Language:

MacArthur-Bates Communicative Development Inventories
Short Form (CDI; Fenson et al., 2000)

2. Child Attention:

Early Childhood Vigilance Task (ECVT; Romero et al, 2012)

Secondary Outcomes:

1. Maternal sensitivity

Filmed book-sharing and play

2. Reciprocity

Filmed book-sharing and play

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Programme Delivery

- A trained facilitator runs group sessions with 4-6 carers
- 6-8 weekly sessions, each devoted to a particular topic, using Powerpoint presentations with embedded demonstration video clips
- the carer and child are given a book home each week to share



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One-to-one

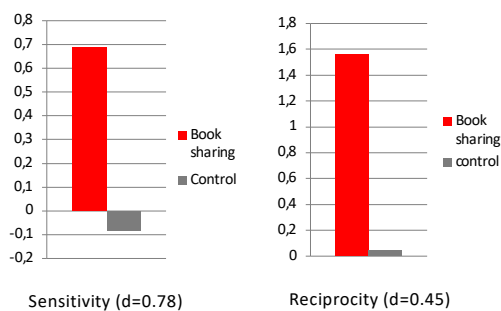
After the group session there is a brief one to one session where the facilitator gives support to the carer

- Provides encouragement
- Reminds about new techniques
- Reiterates old techniques
- If necessary, models good practice



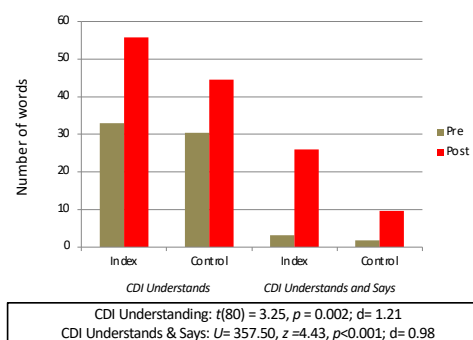
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Effects on Parental Sensitivity and Reciprocity



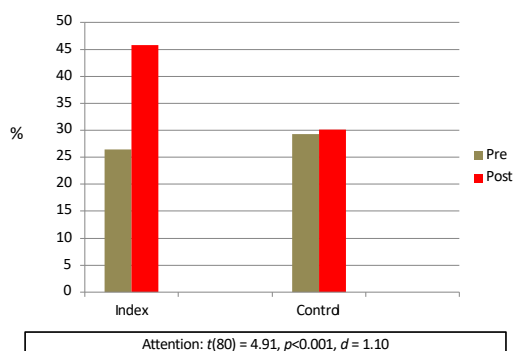
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Parental Report on Infant Language (CDI)



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Infant Attention (ECVT)



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Mediation

Notably:

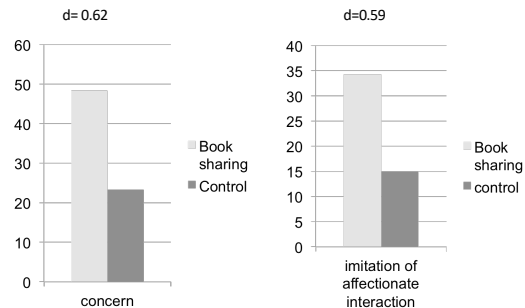
- the impact of the training on **child language** was mediated improved mother-infant **reciprocity** in book-sharing

and

- the impact of the training on **child attention** was mediated by both improved **maternal sensitivity and reciprocity** in book-sharing

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Effects of Book sharing on infant socio-emotional development (% children)



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Content of our DBS programmes

10 to 20 month old programme

1. Introduction
2. Pointing and naming
3. More pointing and naming
4. Making links
5. Talking about feelings
6. Recapitulation
7. Review

30-60 month old programme

1. Introduction
2. Pointing and naming
3. Numbers and comparisons
4. Talking about feelings
5. Talking about intentions
6. Talking about perspectives
7. Talking about relationships
8. Review

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Sample materials from our UK trial with 28-47m-olds

Making links

Talking about feelings

Talking about perspectives

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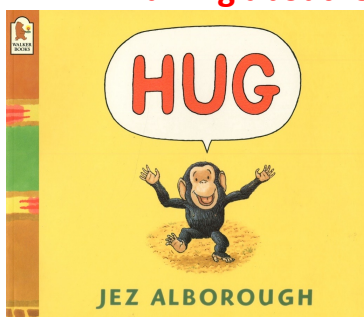
Talking about feelings

When children know about feelings and can talk about them, they can:

- make sense of their own feelings
 - understand other people, and get along with them
- (parents' emotion talk predicts better child social adjustment)

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Talking about feelings

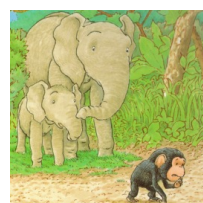


A baby monkey realises he wants his mummy, feels sad, and then feels happy when reunited

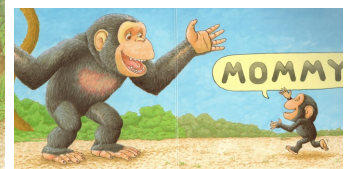
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Talking about Feelings (Training slide)

Help your child understand feeling words like '**happy**', '**angry**' '**worried**', by **highlighting the characters' expressions**, and linking them to their feelings



'Look at his face: the little monkey looks so sad!'



'The monkeys have great big smiles, they look very happy!'

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Talking about Perspectives

If children can understand that people can have different **perspectives**, they can understand why they might behave differently

They can then avoid misunderstandings and problems, and also help others

Children who are good at 'perspective-taking' get on better with other children and are less likely to have behaviour problems

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Talking about perspectives (training slide)

Harry is covered in seaweed. **We** know that he is Harry BUT the other people don't know this.

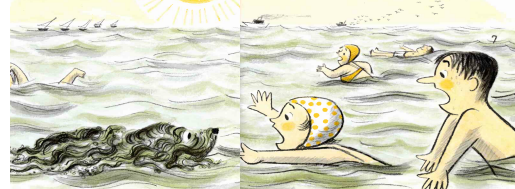
They think he is a sea monster.

So you could ask:

"Why is the little girl scared of Harry?"

Is it because she thinks that Harry is a sea monster?"

Harry By The Sea (Gene Zio & Margaret Bloy Graham)



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Talking about perspectives

We know it's Harry, but the people think he's a sea monster

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Training ECD Teachers: Namibia study

(led by Kaathima Ebrahim of MCDT and Peter Cooper, University of Reading, UK,

in collaboration with Namibia Department of Education)

Training provided over **four, two-hour sessions**

PowerPoint slides with **demonstration videos**

Following the first two sessions, teachers **practised** the techniques

Covid 19 intervened

Online revision session after three months, followed by **sessions three and four**, delivered **online**

Mentorship provided online

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Sample and Assessments

Sample

Eight ECD centres, with **13 teachers**, and **115 3-4 year-old children**

Assessments

Before training, and **10 weeks after**

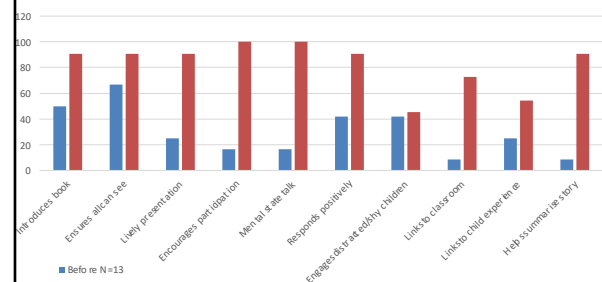
Teacher **questionnaires** about child attention, language and behaviour during book-sharing

Observation of teachers doing book-sharing, and of **children** with picture book

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Observed Teacher Behaviour during Book-Sharing

(% teachers showing high frequency of the skill)

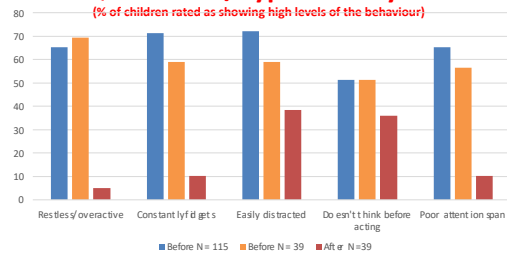


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Teacher Reports of Child Attention Problems

SDQ attention/hyperactivity scale

(% of children rated as showing high levels of the behaviour)

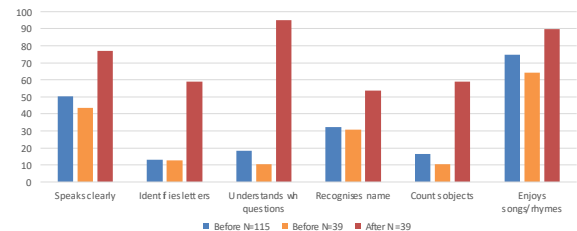


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Teacher Reports of Child Language Development

Language sub-scale of the Brief Early Skills and Support Index (Hughes et al, 2015)

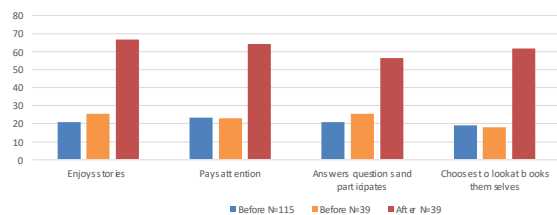
(% children showing clear evidence of the skill)



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Teacher Reports of Child Behaviour in Book-Sharing and with Books

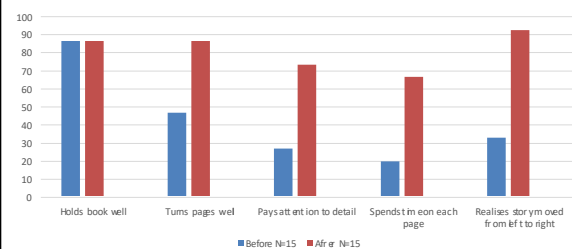
(% children showing the behaviour)



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Observed Child Behaviour with a Book

(% of children showing the behaviour throughout the session)



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Conclusions

- Brief training led to **improvement in ECD teachers' book-sharing skills**
- Teachers rated children as showing **improvement in language, attention, and behaviour during class book-sharing**
- Observational ratings of the children looking at a book showed **improvement in children's competence and interest**

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Clinical applications

- Daria Vettori in Italy- fostering/adopting families; book-sharing facilitates talk about difficult child experiences
- Nienke Verkuyt in Netherlands - hearing impaired children
- Brent Collett in USA - children with cleft lip-palate
- Brenda Salley in USA - children with SLI

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