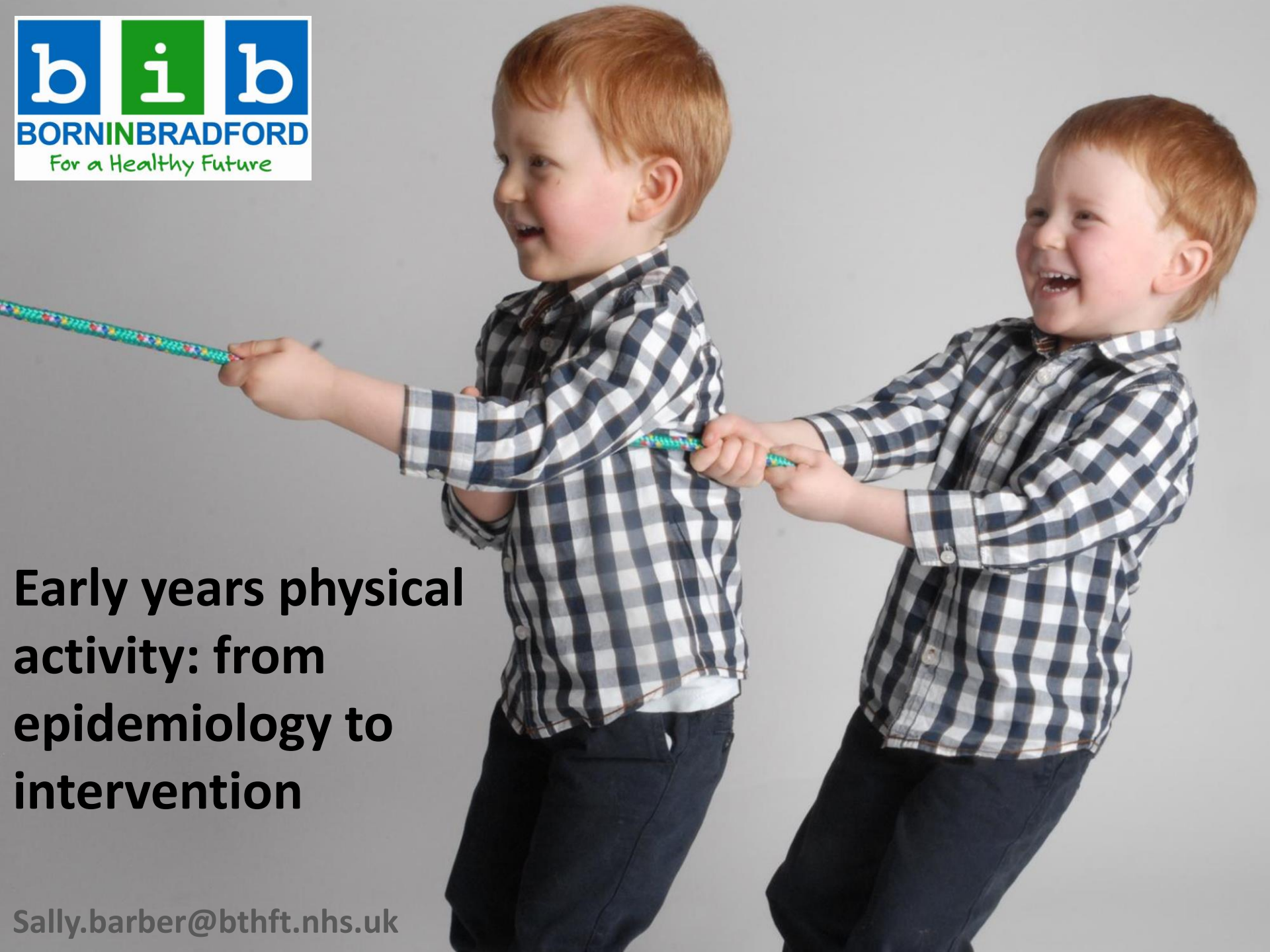

BORNINBRADFORD
For a Healthy Future

Early years physical activity: from epidemiology to intervention

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Born in Bradford (BiB) birth cohort study was established in 2007 to shine the spotlight of research onto the health and wellbeing of children growing up in a multi-ethnic city with high levels of deprivation.

Between August 2008 and March 2009 all mothers recruited to the full BiB cohort were invited to take part in the BiB1000 sub-study

- 1735 mothers recruited 2008-09
- Baseline, 6, 12, 18, 24 and 36 month data collection
- 1558 infants ≥1 follow-up 2008-13

BiB1000 publications:

- Bryant et al. Longitudinal and Life Course Studies 2013
- Fairley et al. BMC Obesity 2015

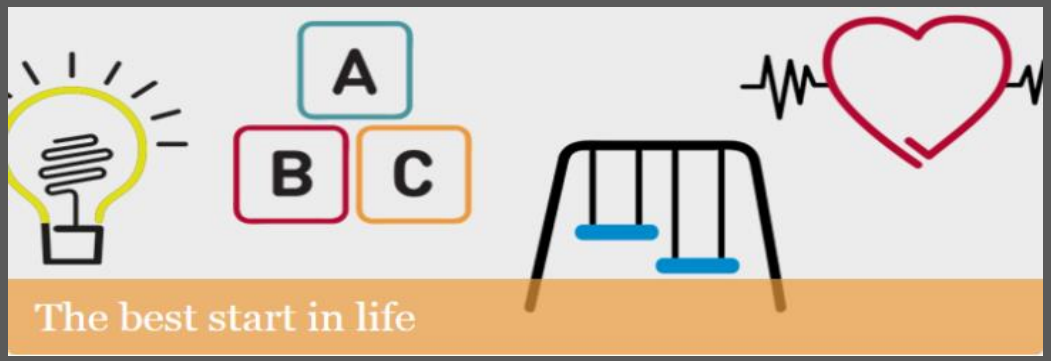
Measurement of PA in the Early Years

- Costa et al. Qualitative feasibility of using three accelerometers with 2-3-year-old children and both parents. *Res Q Exerc Sport. 2013*
- Costa et al. The objective measurement of physical activity and sedentary behaviour in 2-3 year olds and their parents: a cross-sectional feasibility study in the bi-ethnic Born in Bradford cohort. *BMC Public Health. 2015*
- Costa et al. Calibration and validation of the Actigraph GT3X+ in 2-3 year olds. *J Sci Med Sport. 2014*
- Bingham et al. Accelerometer data requirements for reliable estimations of habitual physical activity and sedentary time of children during the early years a worked example following a stepped approach. *J Sports Sci. 2016*
- Bingham et al. Reliability and Validity of the Early Years Physical Activity Questionnaire (EY-PAQ*). Sports 2016*

How active are Early years children?

Average daily minutes in…	Accelerometer Mean ±SD, (%)
Sedentary	339.50 ± 79.35
Light PA	205.12 ± 40.30
Moderate-Vigorous PA	59.9 ± 20.26
Total PA	265.02 ± 54.74
wear time	604.52 ± 103.49
180 min every day guideline	60%

n = 237, age 2.93 ± 0.59 yrs



BHF manifesto: "91% of children aged 2-4 years do not meet the Chief Medical Officers' physical activity guidelines for their age group."

Correlates and determinants: a systematic review

- 130 studies ~ 40 different potential correlate/determinants

CORRELATES

1. Sex correlated with TPA, LPA and MVPA (boys more active than girls)
2. Time spent outdoors in play spaces positively correlated with TPA (not MVPA)
3. Attending preschool/childcare positively correlated with TPA and MVPA

DETERMINANTS (association over time: caution, small number of studies)

1. Boys had higher levels of Light PA compared to girls
2. Children whose mothers had depressive symptoms had lower TPA
3. Children whose parents spent longer playing with them had higher TPA

Bingham et al. Am J Prev Med 2016

Ethnic differences in physical activity @ 2 year olds: BiB1000

	All	White British	South Asian
Total MVPA	18.8%	19.4%	18.1%
Home	70.9%	57.5%	67.7% *
Garden	13.9%	15.8%	13.5%
Sweating	2%	3.9%	2%
Walking	5.8%	11.6%	6% *
Park	3.7%	4.7%	4.8%
Indoor play facility	3.7%	6.5%	6%

For both ethnic groups season was correlated with reported MVPA, with less MVPA for children whose mothers completed the questionnaire in the winter compared to summer

For SA children, those whose mothers reported that the weather sometimes stopped their child from being active had children who had lower MVPA

Barriers and enablers to pre-schoolers PA 6 focus groups, 17 mothers

Barriers	Enablers
Too busy	Someone else to help supervise
Mothers minimised journey's taken	Activities available locally
difficult to leave house with child	Flexible timings
Unsafe neighbourhood	
Can't take child on their own	
Weather/season	
Public transport	

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Durham University

NHS National Institute for Health Research

Funded by an NIHR Public Health Research Grant (reference: 11/3001/16)

Pre-Schoolers in the Playground

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Setting	• Primary school playgrounds
Delivery	• Parental involvement workers • Early years workers
Training	• 2 hour face-to-face • Manual • Telephone support
Structure	• Initiation phase (10 weeks) • Maintenance phase (20 weeks)
Content	• Structured & unstructured play • Information to parents • Take home play equipment

Schools
n = 10

6 South Asian

4 White

Free School Meals = 48%

(31 – 78%)

English Additional Language = 57%

(11.5 – 96.6%)

Children
n = 164

2.8 ± 0.7 yrs

52% female

57% South Asian

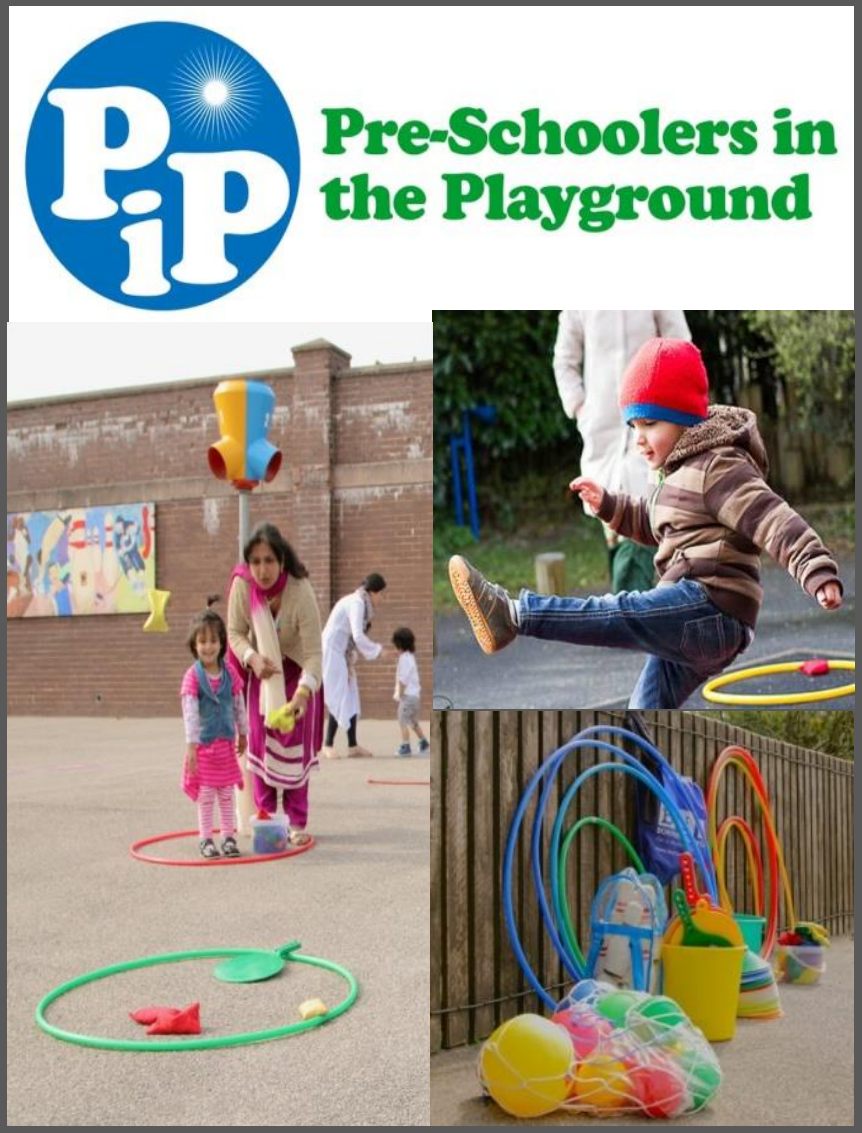
37% White

6% Other

Motives for participation

* School familiarity
* Child will benefit, help child to be more active
* New way to engage with hard to reach families
* Parent & child meaningful activity, improved language and learning

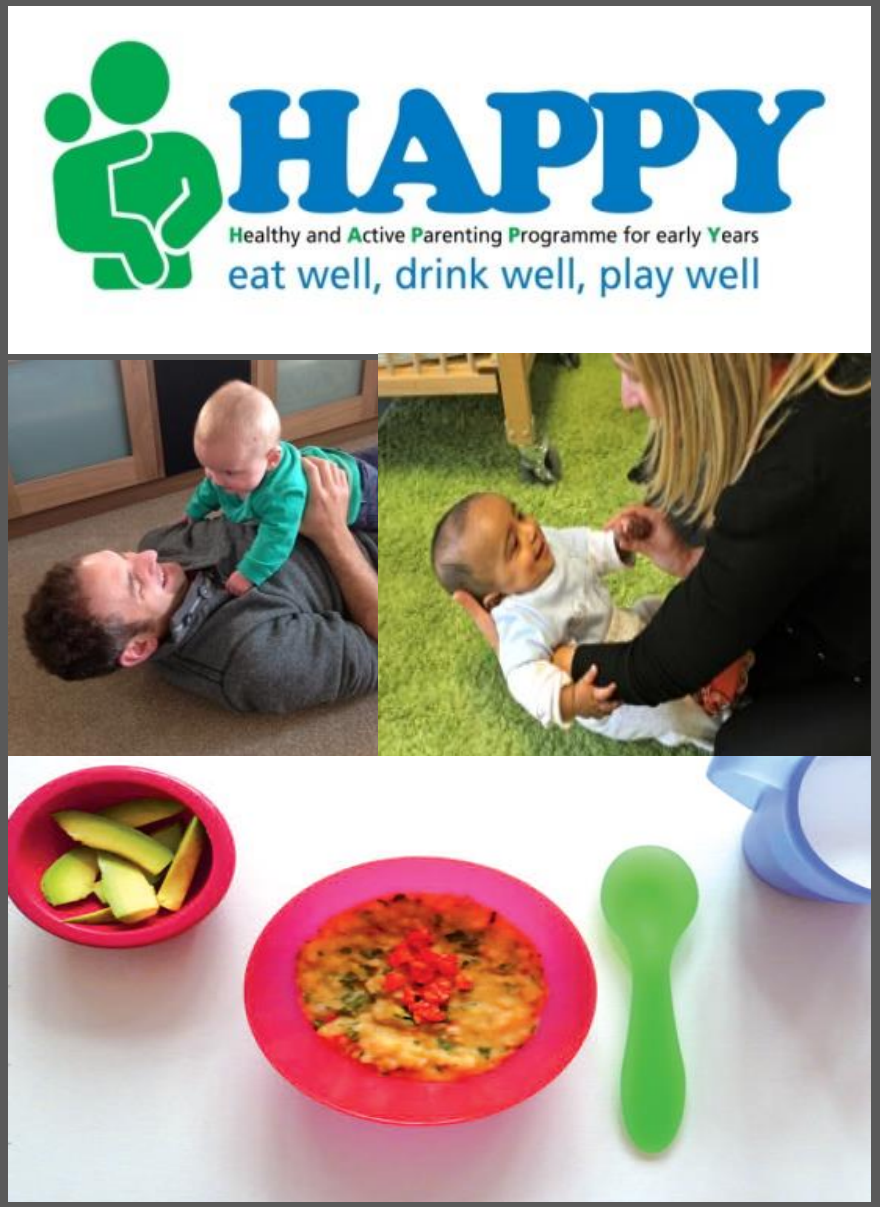
Results and what's next for PiP?



- low attendance, high fidelity, acceptable and deliverable
- Revised intervention building on successful intervention elements and incorporating strategies to improve attendance will be evaluated in the Big Lottery Funded Better Start Bradford Programme

Barber et al. BMC Pilot and Feasibility Studies 2016; 2:12

Barber *et al. Public Health Res* 2015;3(5)



Designed using the process of intervention mapping

1. What do we know about childhood obesity, associated behaviours, our population, local context & environment

2. what behaviours to change, what are the barriers to change

3. How can we change them, what activities can we use?

4. Design material

5/6. deliver and evaluate the intervention

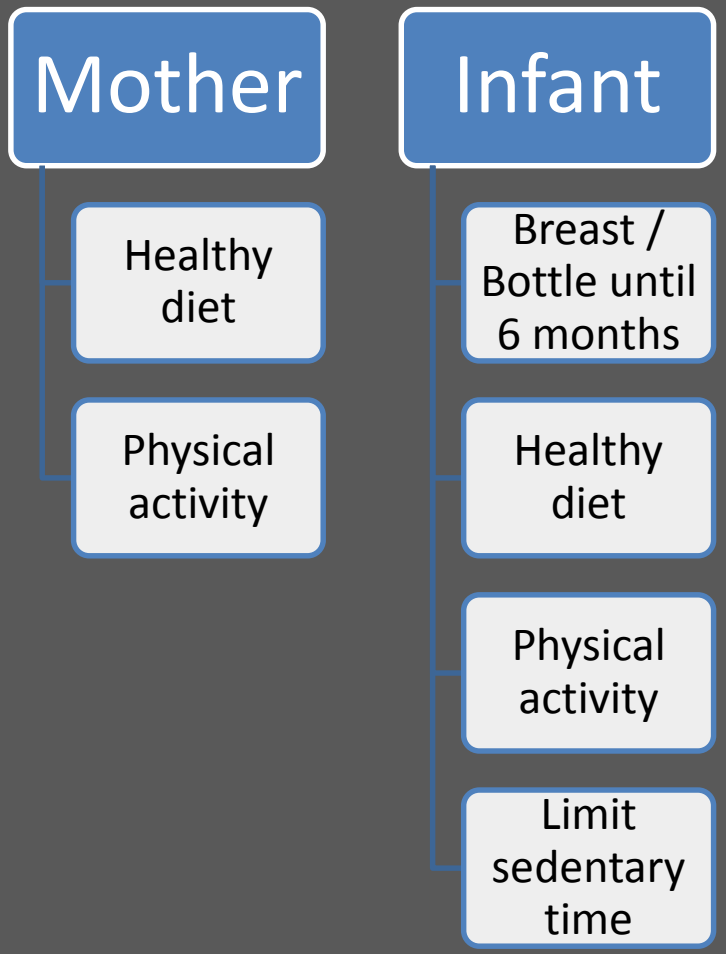
Intervention

6 antenatal sessions

6 postnatal sessions

- Group sessions
- Delivered in children's centres
- Using existing parenting facilitators

Taylor et al, 2013, Implementation Science



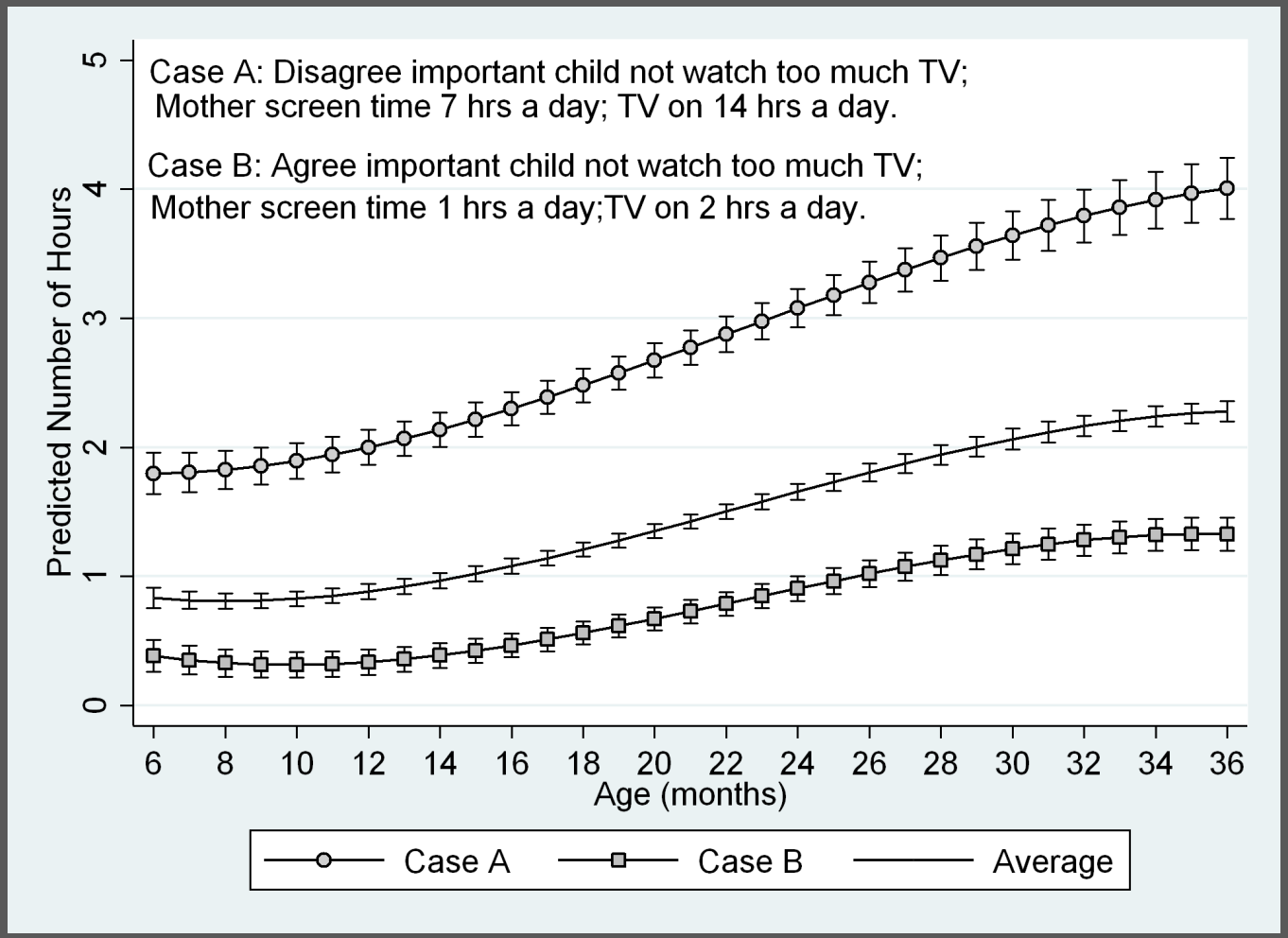
Family Links Nurturing Programme

Results and what's next for HAPPY?

McEachan et al. BMC Public Health 2016

- HAPPY was feasible and acceptable to participants who attended and those delivering it.
- Recruitment rate was low at 30 % (n = 120), although in line with other trials, and study drop-out rates were acceptable.
- Most women who did not attend the first session failed to attend subsequent intervention sessions.
- A clear strategy to enhance attendance (particularly to the first session) has been planned and will be tested in the Better Start Bradford Programme.
- Currently seeking funding for a multi-site, national definitive trial.

Levels and determinants of TV viewing: BiB1000



Additional determinants included:

- Maternal stress
- Ethnicity
- Country of birth

Focus groups have identified barriers and faciliators to changing screen-viewing

Active Imagination – intervention to reduce screen-time

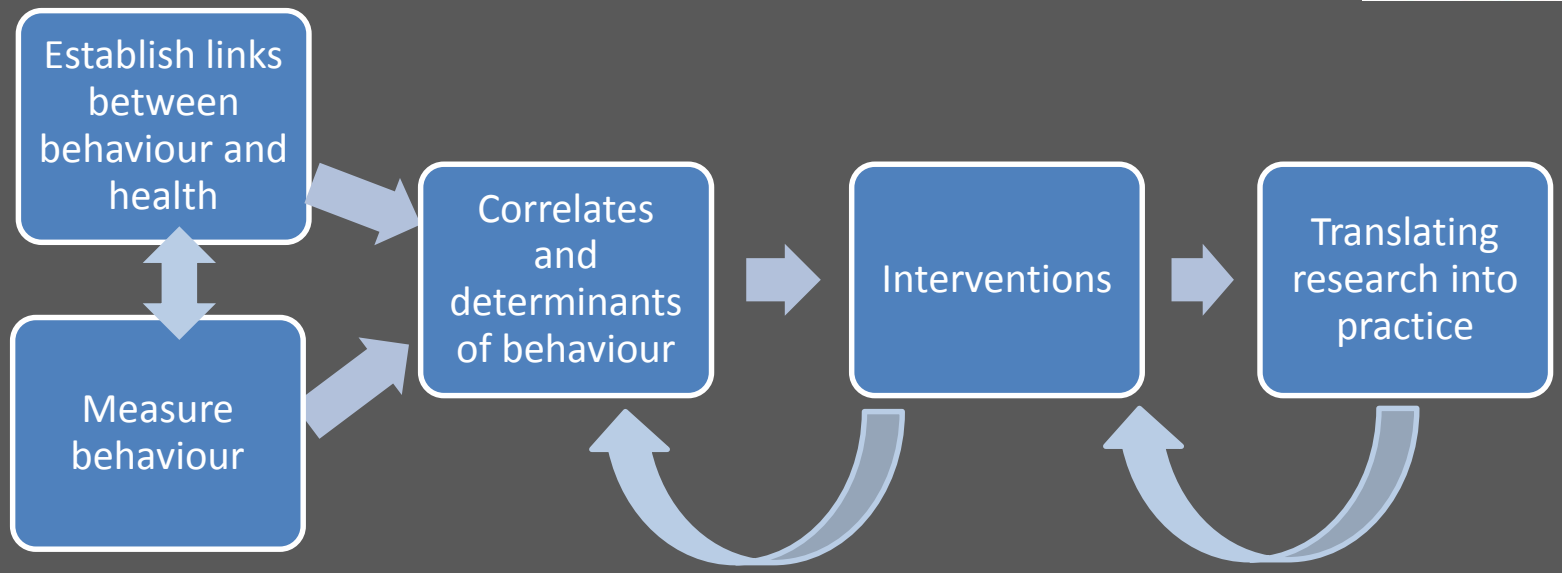
Systematic review of 14 studies – Wu et al. 2016

Successful interventions were:

- health promotion cirricular or counselling
- < 7 months in duration
- ≥2 session

- Bolt on to existing language and communication interventions ‘imagination library’
- Bolt on to parenting programmes
- Early years workers training

Summary and things to consider



- Focus on active EVERYDAY
- Importance of parental involvement
- Weather and season are barriers to overcome
- Settings motive for participation are more focused on learning, social development than health
- Attendance to group based 'health' sessions can be poor, is there another way?