

# ***Early dyadic intervention in Autism Spectrum Disorder***

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and Manchester Academic Health Sciences Centre



# *A transactional account of autism development*

Autism as individual difference within neurodiversity

- Difficulties in social communication and interaction
- Repetitive patterns of behaviour, interests, activities

ASD development (like all development) happens in transaction with the environment

Differential susceptibility to impaired social relatedness in development

- Symptom trajectories secondary to this ....

Mixed vulnerabilities and strengths – but significant, lifelong impact

- The ‘economic cost’ of autism (UK £32 billion annually) is linked to this social impairment

**Intervention understood in this context.....**

Parent-mediated transactional intervention within a developmental context

Prodromal period – *iBASIS*

Post Diagnostic pre-school and early school years – *PACT*

## *The beginnings of autism*



Discovery of early biomarkers

**BASIS**  
British Autism  
Study of Infant  
Siblings (n>200)

8 months

14 months

24 months

36 months

**Autism**

MRC | Medical  
Research  
Council

E·S·R·C  
ECONOMIC  
& SOCIAL  
RESEARCH  
COUNCIL

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*Predict autism emergence at 3yrs*

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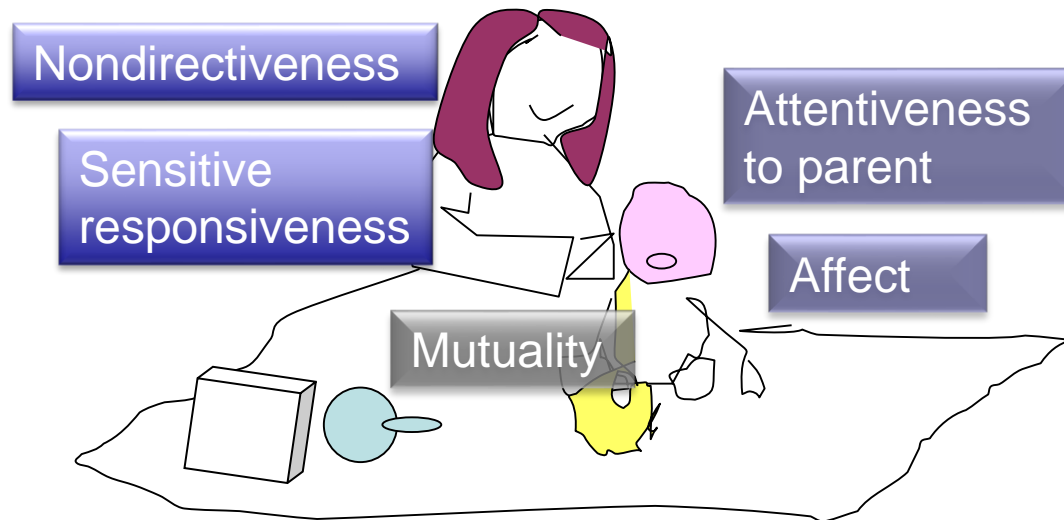
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# *Parent-infant interaction in prodromal autism*

- 6-min parent-infant free floor play videotaped in lab
- *Manchester Assessment of Caregiver-Infant Interaction* (MACI; Wan et al., 2012, 2013)
- Global rating (1-7) scales, blind-rated, independently validated on HR and LR samples

5 MACI scales of interest

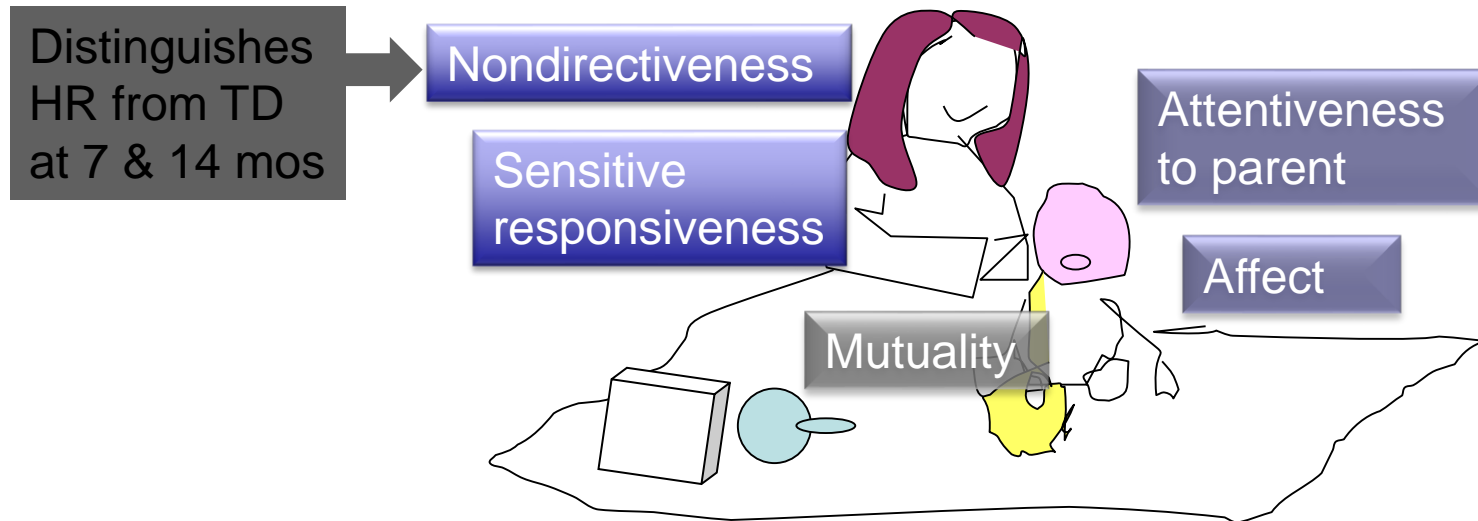




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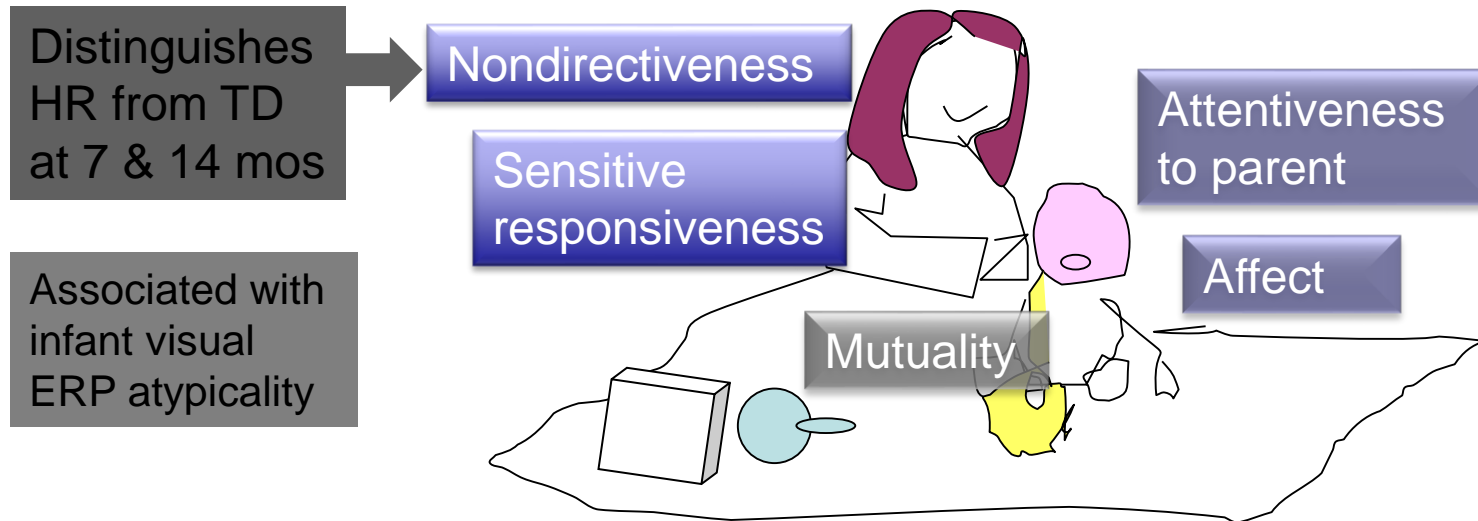
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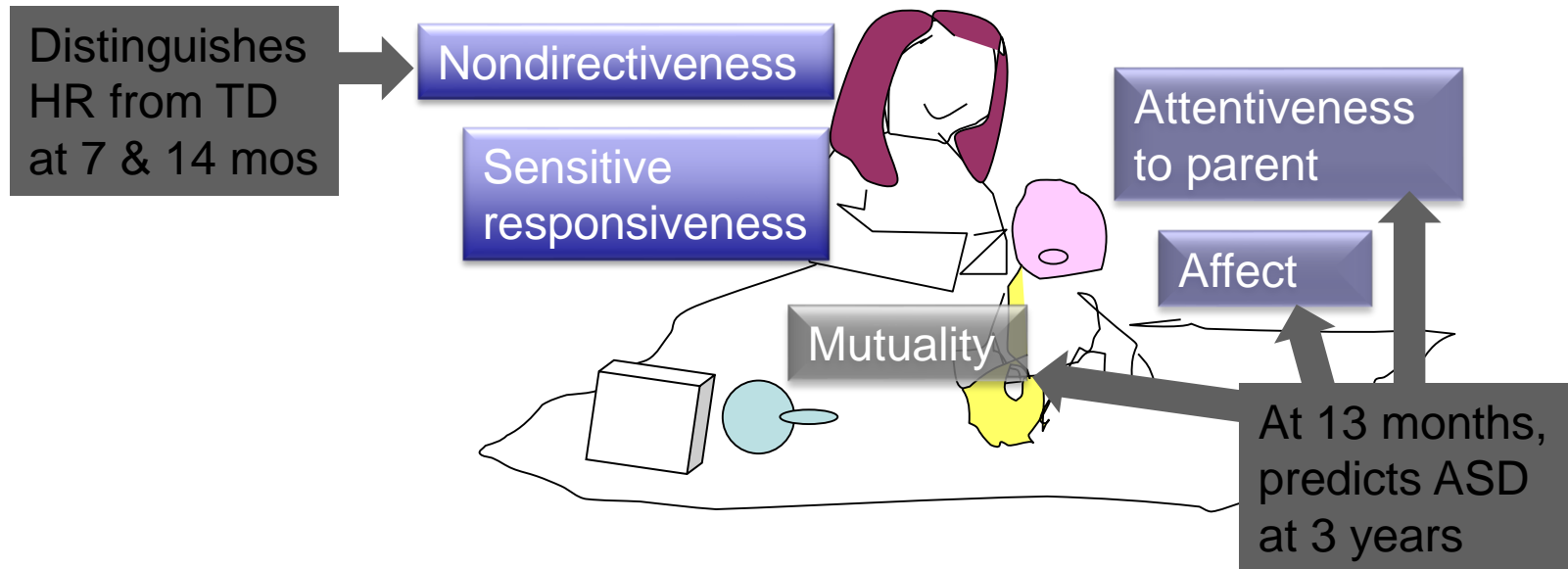
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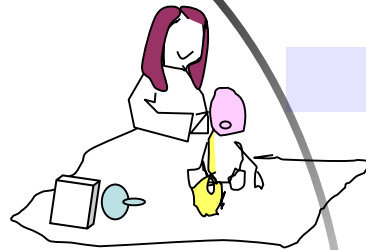
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# Theory

- Interactive specialisation of the 'social brain' and social functioning experience dependent
- Many hours of caregiver-infant interaction in the first year
  - *fine tuning of perceptual systems, joint attention, intentional communication, social imitation*
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- .....may act to reduce learning opportunities and amplify an initially disordered developmental trajectory at a behavioural and neural level
- Modification of this social environment as a prodromal intervention



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***Prodromal Intervention***  
***iBASIS 9-14 months***

8 months

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*auti?tica*

Science in the Service of Autism



**AUTISM SPEAKS™**  
It's time to listen.

*the*waterloofoundation\*

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*Risk biomarker  
proximal outcomes*

**Atypical behaviour**

14 months

24 months

*Downstream  
symptoms/'behavioural  
phenotype' outcome*

36 months

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# *Parent-mediated intervention*



Parent and  
therapist  
interaction  
changes parent  
behaviour



Changed  
parental  
behaviour leads  
to improved  
child dyadic  
communication



Improved child  
dyadic  
communication  
generalises to  
other contexts



Intervention delivered with  
parents to enhance social  
development in the  
neurologically-vulnerable  
child

# *What is special about parent-mediated intervention?*

- Natural environment of family
  - Context for social development
  - Transactional account of known developmental processes
  - Does **not** imply primary relational/attachment problems
- Parental empowerment, confidence, family function
- Efficient of professional time
- Potential 24/7 therapeutic effect extending beyond treatment end

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- Parental empowerment, confidence, family function
- Efficient of professional time
- Potential 24/7 therapeutic effect extending beyond treatment end
- To do this the intervention aims to make **focused, reproducible** impacts on targeted parental interactions using **video feedback**
  - More than education or coaching
  - Known to be very effective for observation, reflection and adult learning

*Chain of effect:*

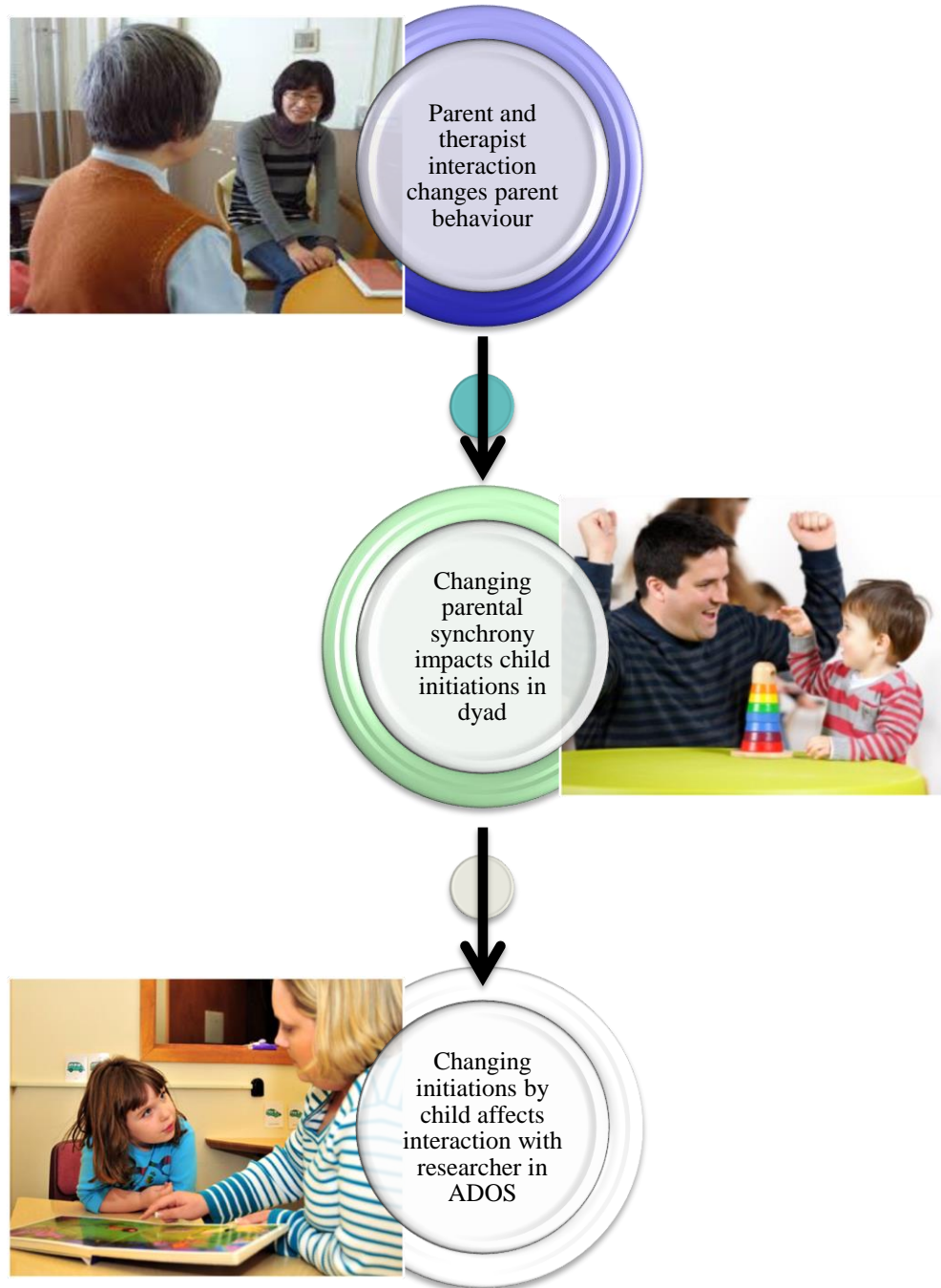
*Parent change*

*leads to*

*Child interaction  
change with parent*

*leads to*

*Improved child  
interaction with others  
– symptom reduction*



# Process

- Key *mechanism of therapy process* is episodes of video-feedback with parent
  - (no direct work with child)
- Clinic/home sessions -
  - Review of progress since last time
  - Video of naturalistic play
  - Video-viewing and feedback session focused according to programme stage
  - Home-practice preparation and written summary

# Infancy intervention – ‘iBASIS-VIPP’

- Home based, manualised
- 12 sessions over 5 months (9-14 months)
- Daily practice plans for parents

## *Sequential themes*

- ‘Infant watching’
- ‘Speaking for the baby’ – *inferring intentionality*
- Generalising to mealtime and other activities
- Sharing feelings – *affect matching*
- ‘Sharing talk’ – *promoting communication*

## *Adapting to ‘atypicality’:*

- Inflexible attentional style, face preference and visual face processing, affect matching and reciprocity, reactivity, atypical sensory behaviours, social babble/early communication



## iBASIS Intervention RCT N=54, 9-14 months

Parent-mediated intervention versus no intervention for  
infants at high risk of autism: a parallel, single-blind,  
randomised trial



Jonathan Green, Tony Charman, Andrew Pickles, Ming W Wan, Mayada Elsabbagh, Vicky Slonims, Carol Taylor, Janet McNally, Rhonda Booth, Teodora Gliga, Emily J H Jones, Clare Harrop, Rachael Bedford, Mark H Johnson, and the BASIS team\*



**Lancet Psychiatry 2015;**  
**2: 133-40**


THE JOURNAL OF CHILD  
PSYCHOLOGY AND PSYCHIATRY



*Journal of Child Psychology and Psychiatry* \*\*\*(2017), pp \*\*-\*\*

doi:10.1111/jcpp.12728

## Randomised trial of a parent-mediated intervention for infants at high risk for autism: longitudinal outcomes to age 3 years

J. Green,<sup>1,2</sup> A. Pickles,<sup>3,4</sup> G. Pasco,<sup>3,5</sup> R. Bedford,<sup>3</sup> M.W. Wan,<sup>6</sup> M. Elsabbagh,<sup>5,7</sup>  
V. Slonims,<sup>8</sup> T. Gliga,<sup>5</sup> E.J.H. Jones,<sup>5</sup>  C.H.M. Cheung,<sup>5</sup> T. Charman,<sup>3</sup> M.H. Johnson,<sup>5</sup>  
and The British Autism Study of Infant Siblings (BASIS) Team\*

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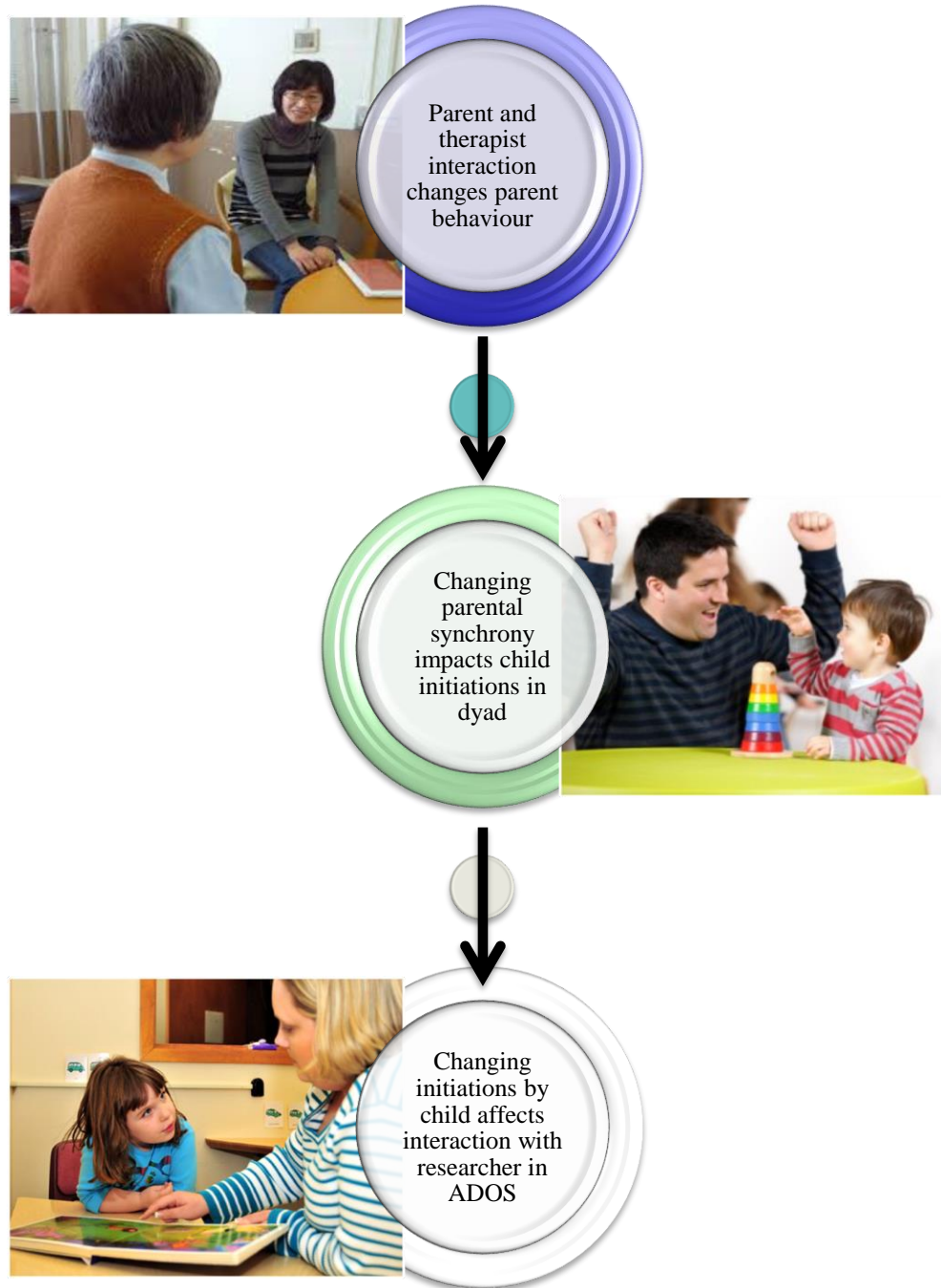
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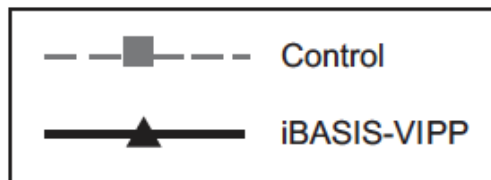
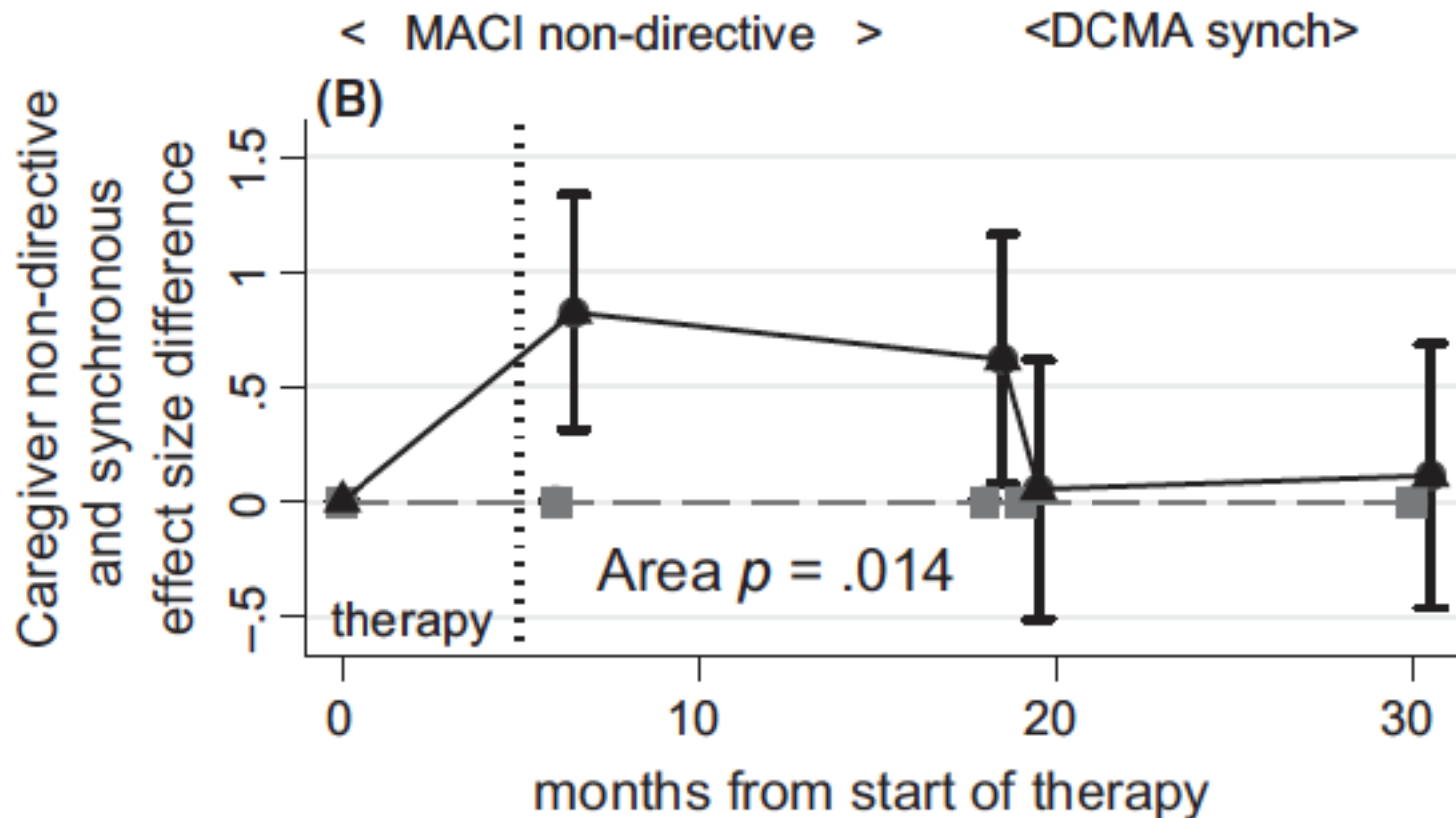
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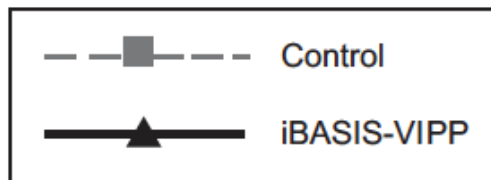
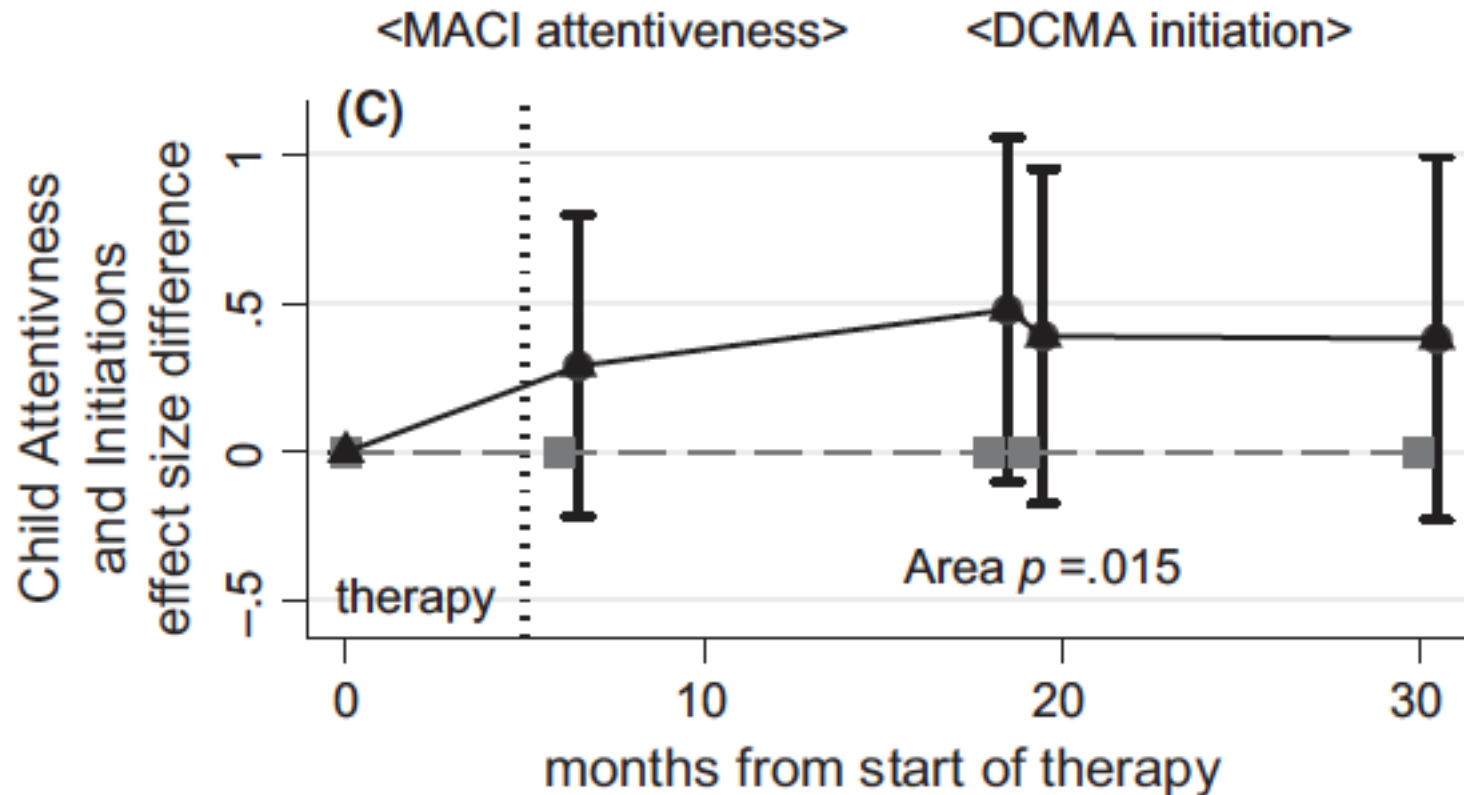
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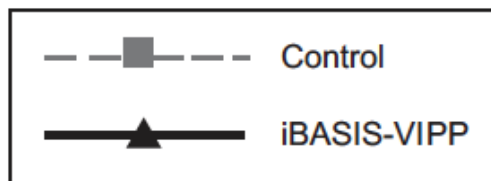
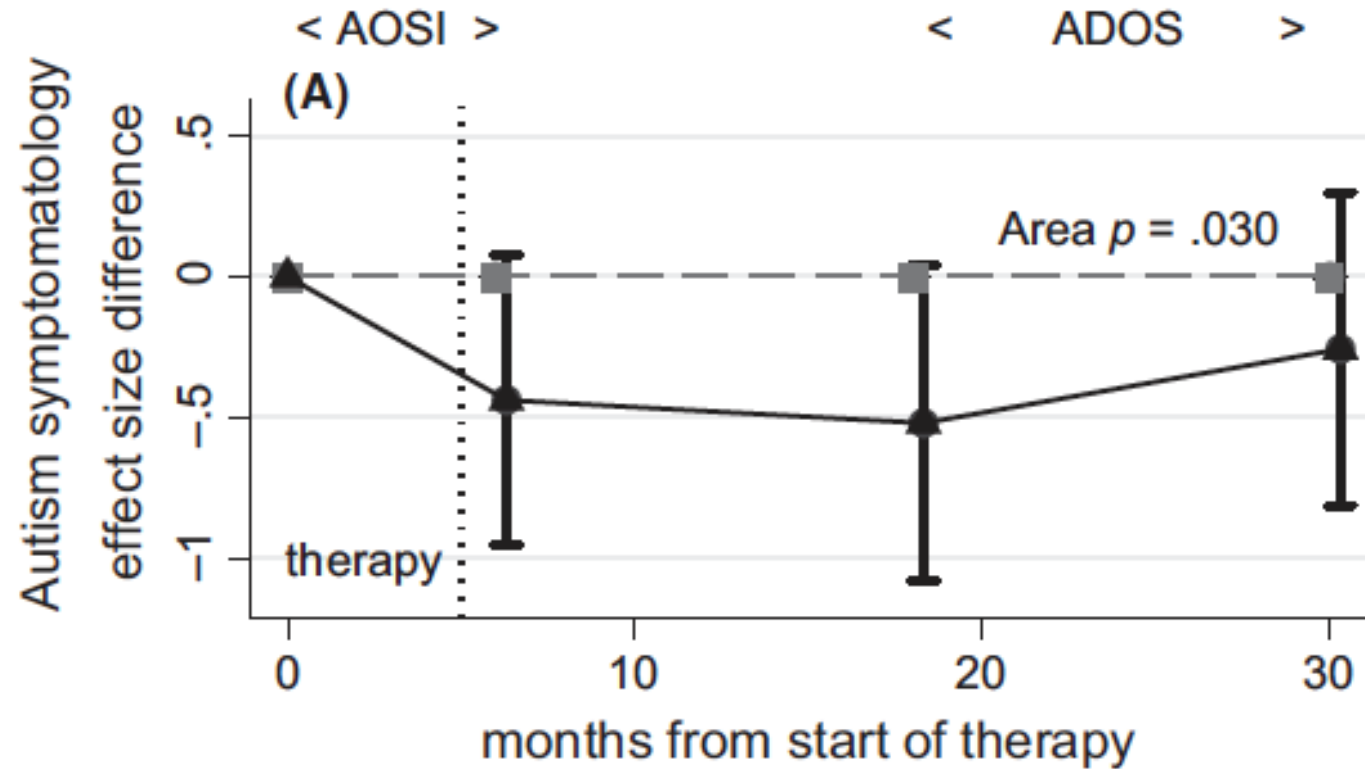
## *Parental 'non-directive' and 'synchronous' interaction with infant*



# *Child 'attentiveness' and 'communication initiation' to parent*



# Child autism symptoms



- Numbers too small to be informative on ASD diagnostic outcome
- No change in ‘structural language’ - but improved social use of language
- No change in other developmental indices
- Replication in Australia

# *Post-diagnostic intervention*



# *Theoretical base*

- *Atypical communication in autism*
  - Reduced shared attention and mutuality
  - Child communicative signals weak or infrequent
- *Imbalanced Parent-Child interaction*
  - Parent perplexity
  - Reduced 'meshing' - 'asynchrony'
  - 'Fill in the gaps' or withdraw
  - Increase adult initiations/non-reciprocal interactions
  - Reduced child opportunities for communication learning, relating
- *But positively* –
  - Altering transaction by attending to communication acts increases them
  - Expansion from child's base ('semantic contingency') increases communication
  - Children with autism need a high dose of this
- *Developmental hierarchy* - of pre-cursor skills for communication





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behaviour



Changing  
parental  
synchrony  
impacts child  
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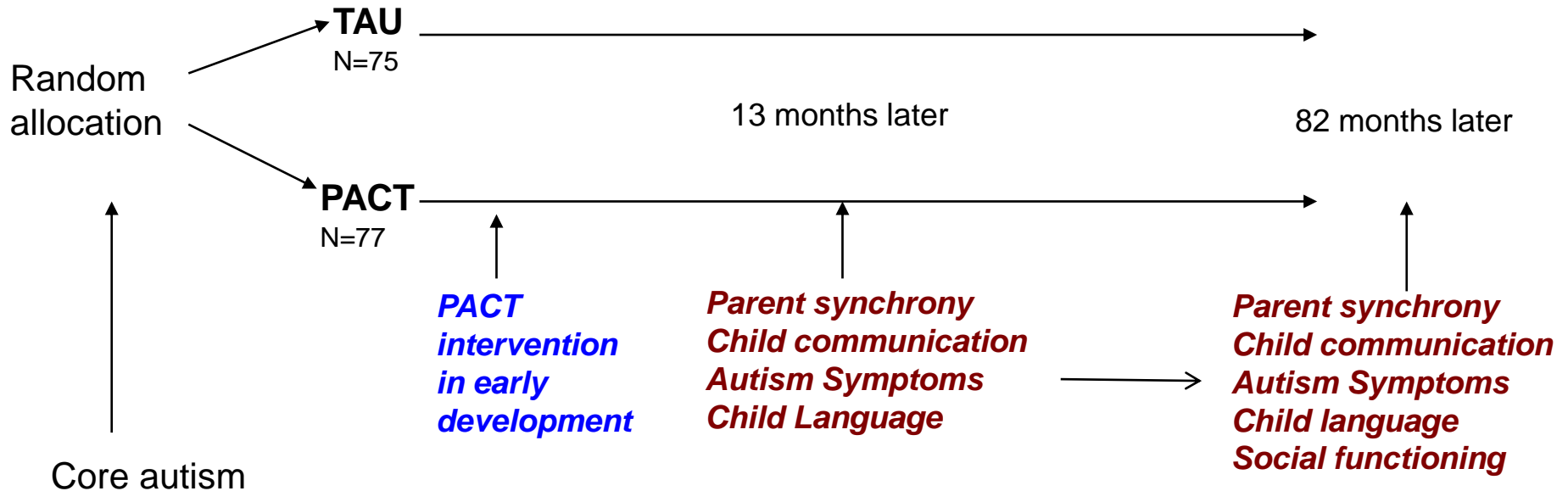
Changing  
initiations by  
child affects  
interaction with  
researcher in  
ADOS

## 13 month intervention

Initial 6 months – Biweekly clinic visits (3 hrs) + home work (30 mins/day) – viz 2hrs/wk

Next 6 months – Consolidation – Monthly clinic visits + homework (30 mins/day) and generalisation

18 sessions possible (median 16 (IQR 13-17) attended in PACT)



- Age average 45 months
- 79% learning difficulties
- Language ability ~18 month level
- 23% phrase speech

80% FU



## Parent-mediated communication-focused treatment in children with autism (PACT): a randomised controlled trial



Jonathan Green, Tony Charman, Helen McConachie, Catherine Aldred, Vicky Slonims, Pat Howlin, Ann Le Couteur, Kathy Leadbitter, Kristelle Hudry, Sarah Byford, Barbara Barrett, Kathryn Temple, Wendy Macdonald, Andrew Pickles, and the PACT Consortium

*The Lancet (2010), 375, 9732; 2152-2160*



## Parent-mediated social communication therapy for young children with autism (PACT): long-term follow-up of a randomised controlled trial



Andrew Pickles, Ann Le Couteur, Kathy Leadbitter, Erica Salomone, Rachel Cole-Fletcher, Hannah Tobin, Isobel Gammer, Jessica Lowry, George Vamvakas, Sarah Byford, Catherine Aldred, Vicky Slonims, Helen McConachie, Patricia Howlin, Jeremy R Parr, Tony Charman, Jonathan Green



*The Lancet (2016); 388: 2501-2509*

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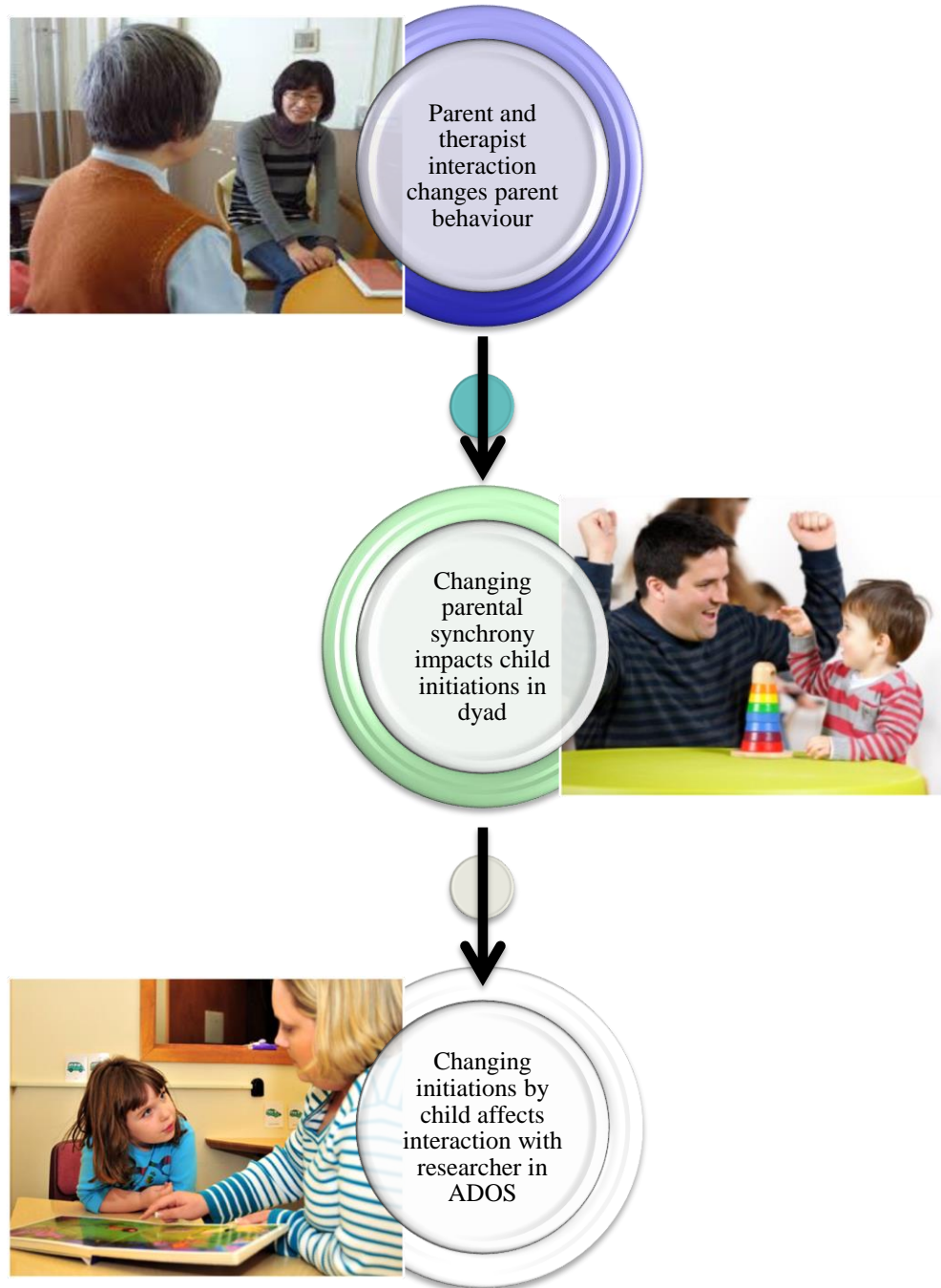
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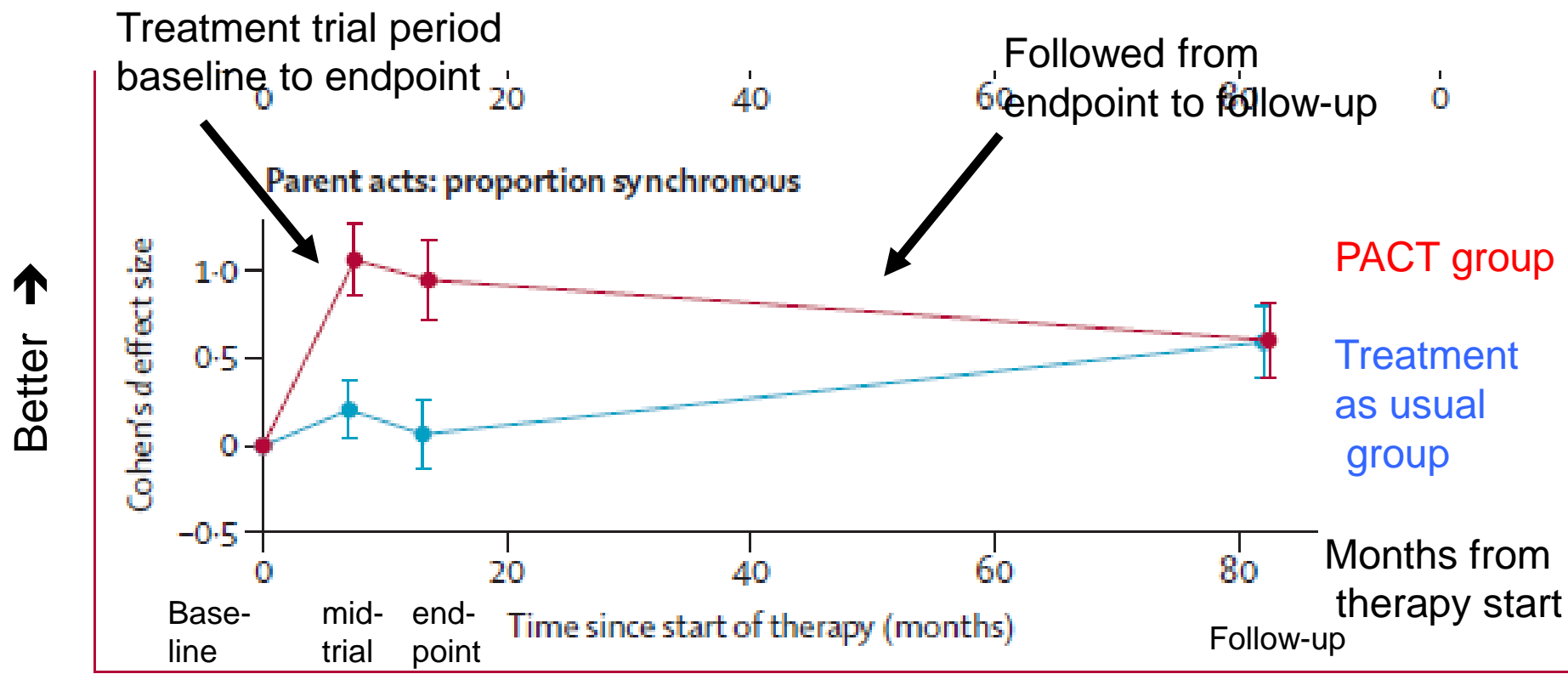
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# Effect of therapy on targeted parent behaviour

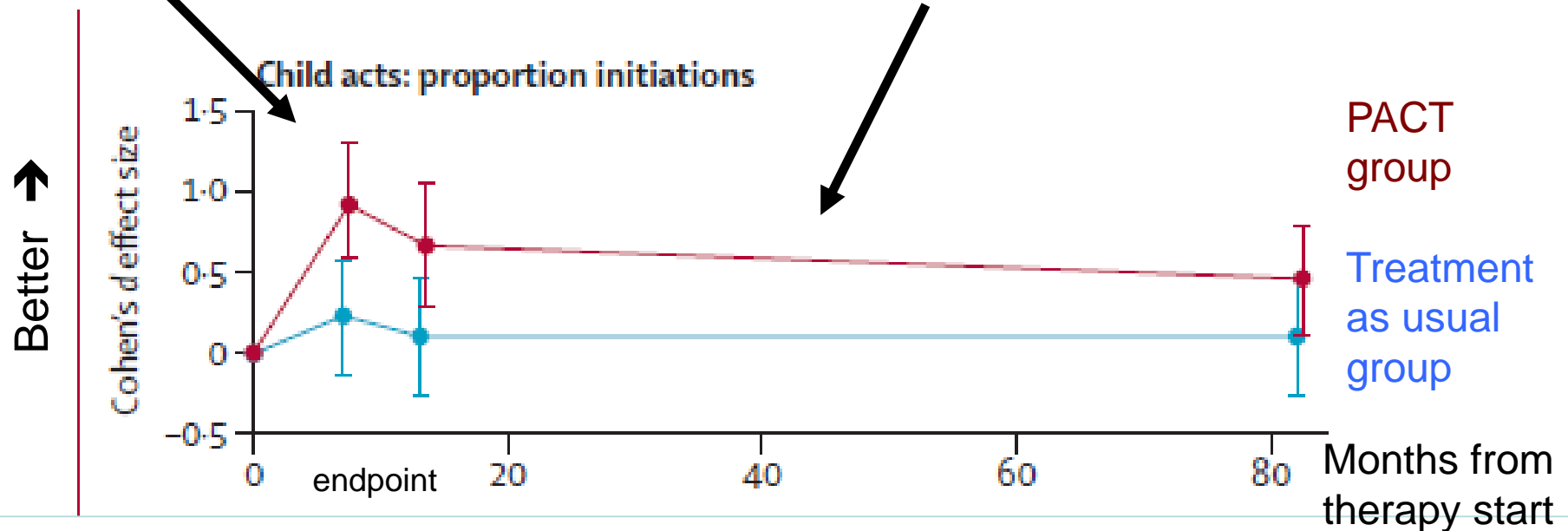


# Effect of therapy on targeted child behaviour with parent

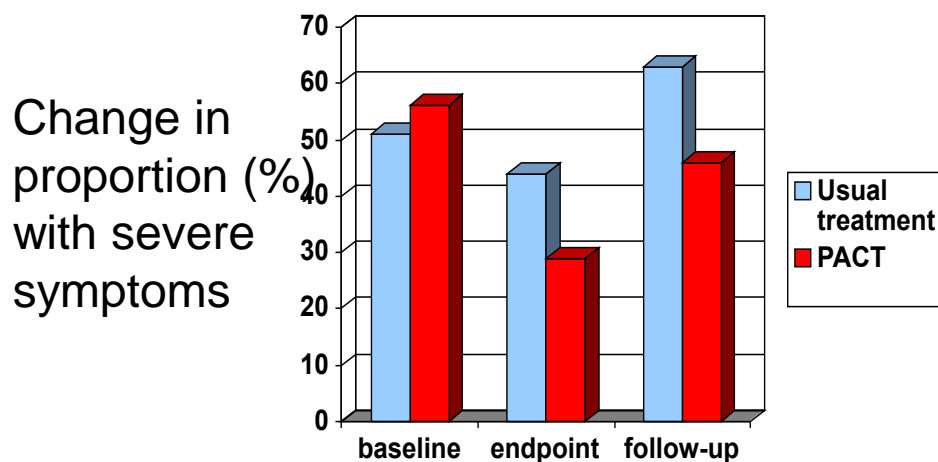
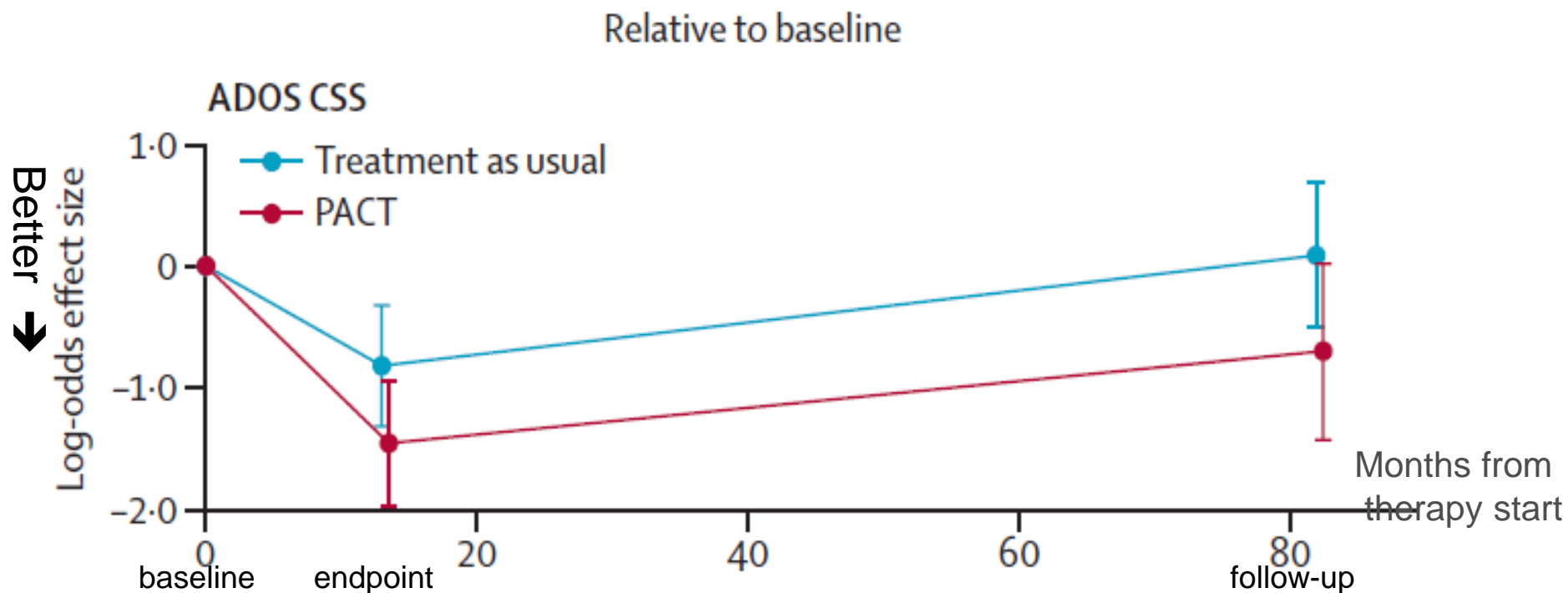
Increase in child social communication with parent persisted

Treatment trial period  
baseline to treatment  
end

Followed from  
endpoint to follow-up



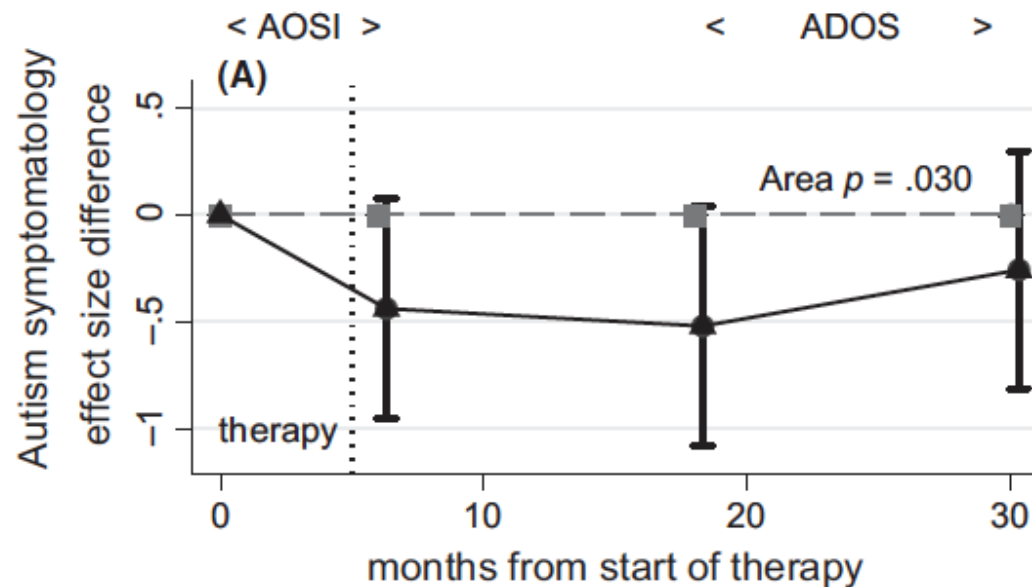
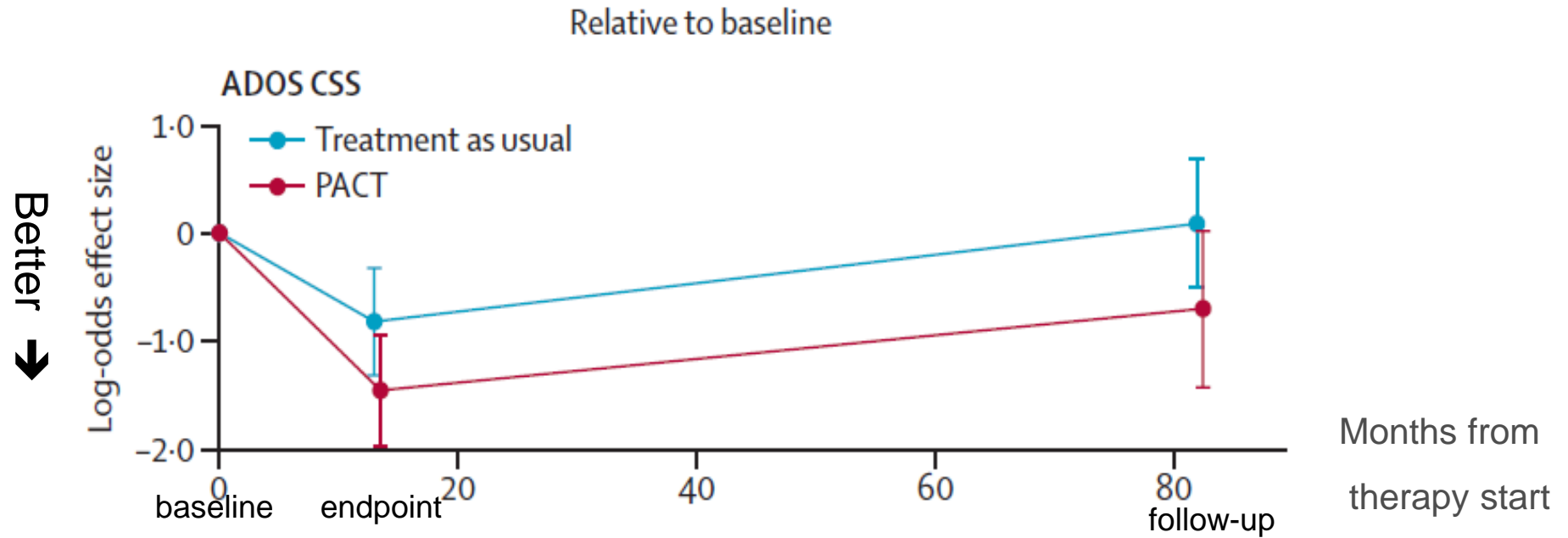
# The time path of autism symptom severity



Parent *and* teacher outcome ratings support the blinded findings

No change in structural language but improved pragmatics

# The time path of autism symptom severity





***Mediation  
analysis confirms  
theory and  
implementation  
(Pickles et al 2016)***



**Treatment effect on  
parental synchrony  
**70% mediates** child  
communication  
change**



**Child communication change  
**97% mediates** treatment effect  
on autism SC symptoms**



# *Summary*

Targeted alteration in dyadic social transaction in early autism reduces autism symptom severity in both **social** and **repetitive behaviour** domains

Sustained effect after treatment end (2 and 6 years) suggests embedded change (mediated in PACT by parental responsiveness)

ADOS change reflects generalisation beyond the dyad

Results support a transactional model of social development in autism

Efficient early support for family resilience and management in an enduring condition

## *Dissemination and ongoing work*

*UK NIHR 'Signal' study* for high quality design and relevance to decision makers

*NICE Clinical Guideline* 170 (2013)

*UK 'Improving Access to Psychological Treatment' (IAPT)* curriculum for Autism

*Dissemination: IMPACT CiC* - Training in 10 countries

Generalisation to School



Adaption and scale up in India



# *Intervention in the British Autism Study of Infant Siblings (iBASIS)*



The University of Manchester

**Jonathan Green, Ming Wai Wan, Samina Holsgrove,  
Janet McNally, Clare Harrop, Carol Taylor, Hannah  
Venton-Platz, Ami Brooks**



**Mark Johnson, Mayada Elsabbagh, Emily Jones,  
Teea Gliga, Helen Maris, Helen Ribeiro, Kim Davies,  
Jeanne Guiraud, Janice Fernandes, Leslie Tucker**



**Vicky Slonims, Rhonda Booth**



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*Funding:*

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*Background funding...*



*Thank you to the participating Families and Children*

*PACT Collaborating Team*

Jonathan Green  
Catherine Aldred  
Barbara Barrett  
Sam Barron  
Karen Beggs  
Laura Blazey  
Katy Bourne  
Sarah Byford  
Tony Charman  
Julia Collino  
Ruth Colmer  
Anna Cutress  
Clare Harrop  
Tori Houghton  
Pat Howlin



Kristelle Hudry  
Ann Le Couteur  
Sue Leach  
Dharmi Kapadia  
Kathy Leadbitter  
Helen McConachie  
Wendy MacDonald  
Jeremy Parr  
Andrew Pickles  
Sarah Randles  
Carol Taylor  
Vicky Slonims  
Kathryn Temple  
Lydia White



*Thank you!*

More Information (papers, videos, blogs, interviews, media):

Search [‘iBASIS’ or ‘PACT 7-11’, Manchester](#)

**Training in PACT -**

<http://research.bmh.manchester.ac.uk/pact/TrainingPACT/>

Contact: [jonathan.green@manchester.ac.uk](mailto:jonathan.green@manchester.ac.uk)

