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Content

- School Breakfast Clubs and Cognitive Function
- Does it matter what Children eat for breakfast?
- School Breakfast Clubs and Social Impact/Relationships
- Holiday Hunger and Social Impact
- Holiday Hunger and Educational Attainment



Background (1)

- Helps Weight control (Timlin et al., 2008).
- Improved cognitive performance & behaviour (Pollitt & Matthews, 1998; Wesnes et al., 2003).
- Attendance and punctuality (Harrop & Palmer, 2002; Haras, 2005).
- Many children not consuming breakfast (Rampersaud et al., 2005; Moore et al., 2007).

Background (2)

- Breakfast consumption has no effect on cognitive performance (e.g. Cromer et al. 1990).
- No effect of habitually skipping breakfast (Dickie & Bender, 1982).
- No association between consuming breakfast and STM, problem solving, or attention (Lopez et al., 1993)

Study 1

Evaluate the impact of breakfast club attendance on children's cognitive performance and friendships.

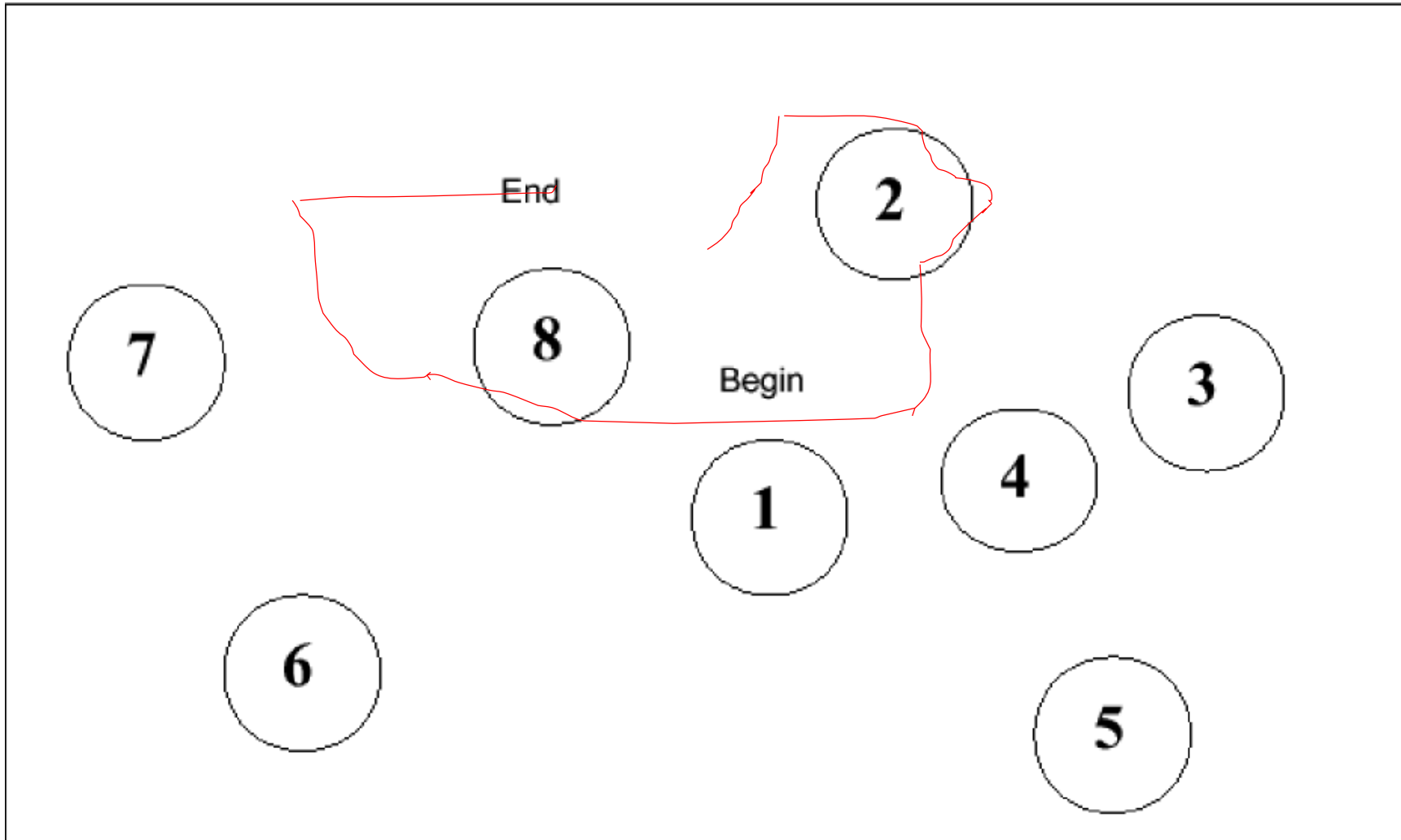


Method

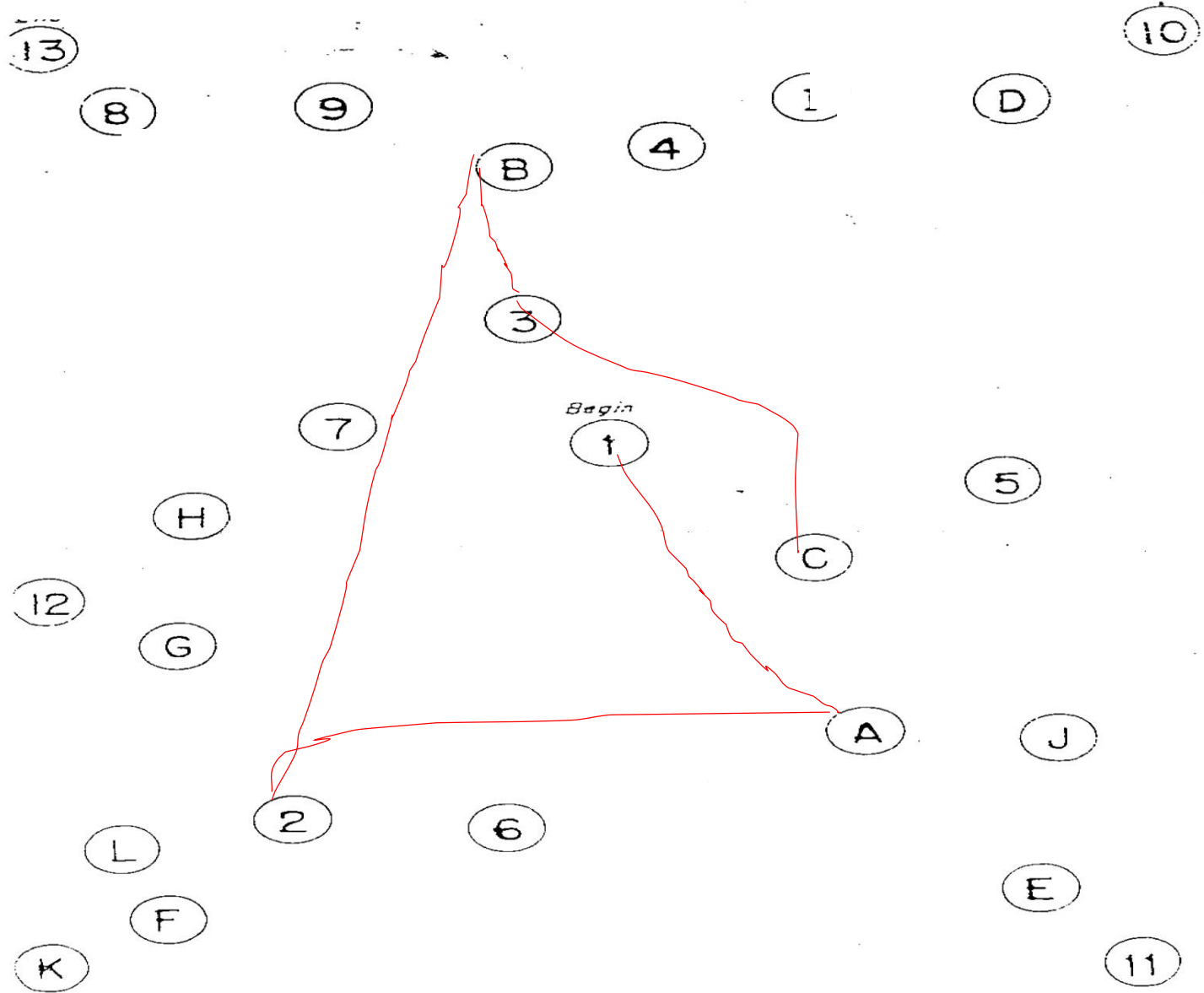
- Phase 1: Start of academic year.
- Cognitive tests (Primary School Children).
- Social Behavioural Questionnaires (Primary School Children).

- Phase 2: Six months later

Cognitive task: Trail Making A – Children aged 7 years+ (Reitan, 1956)



END



Cognitive task: Number search task (Rogers et al., 1995)

Please circle each pair of even numbers in a row going across the page from left to right.
For example 3 6 4 5 8 7 4 5 6 8 5 4 7 2 1 7 4 9 3 2 4 3 9 8 1

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Friendship Questionnaire (adapted from Bukowski et al., 1994).

Q. If something is bothering me, I can tell my friend about it even if it is something I cannot tell to other people.

Q. If I have a problem at school or at home, I can talk to my friend about it.

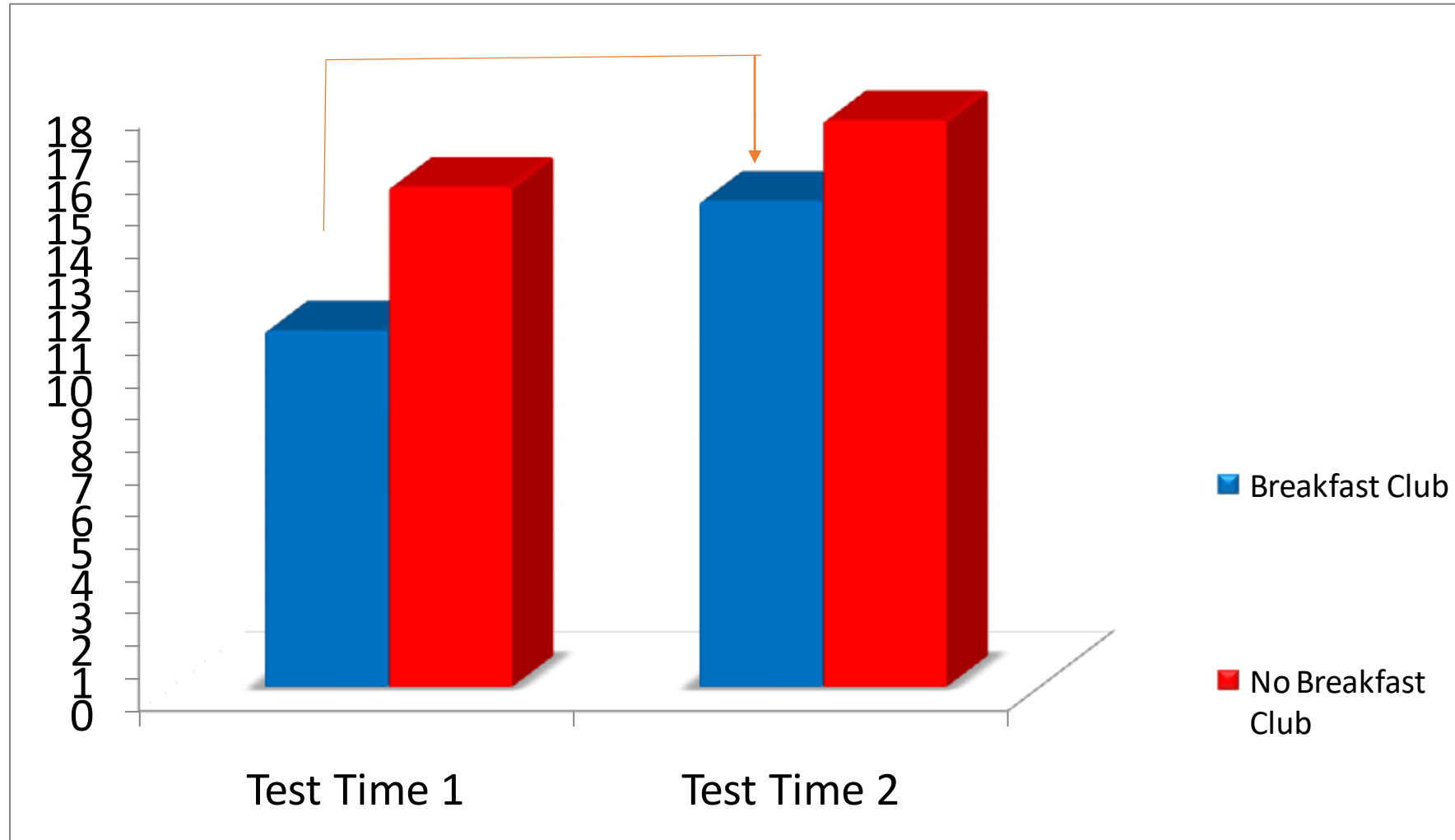


Teacher Questionnaire

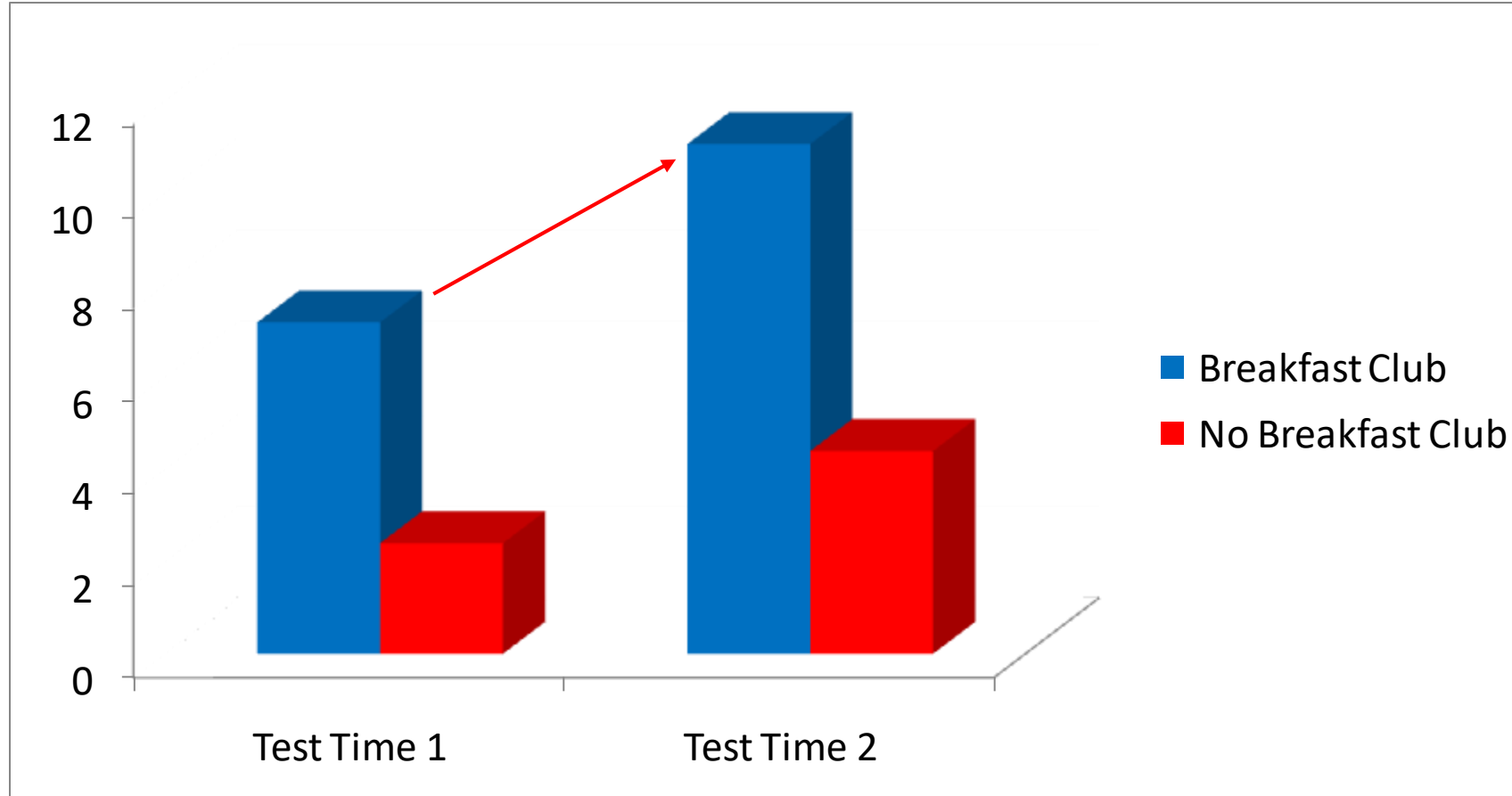
Q. If I have a problem at school or at home, I can talk to my teacher about it.

Q. My teacher would help me if I needed it.

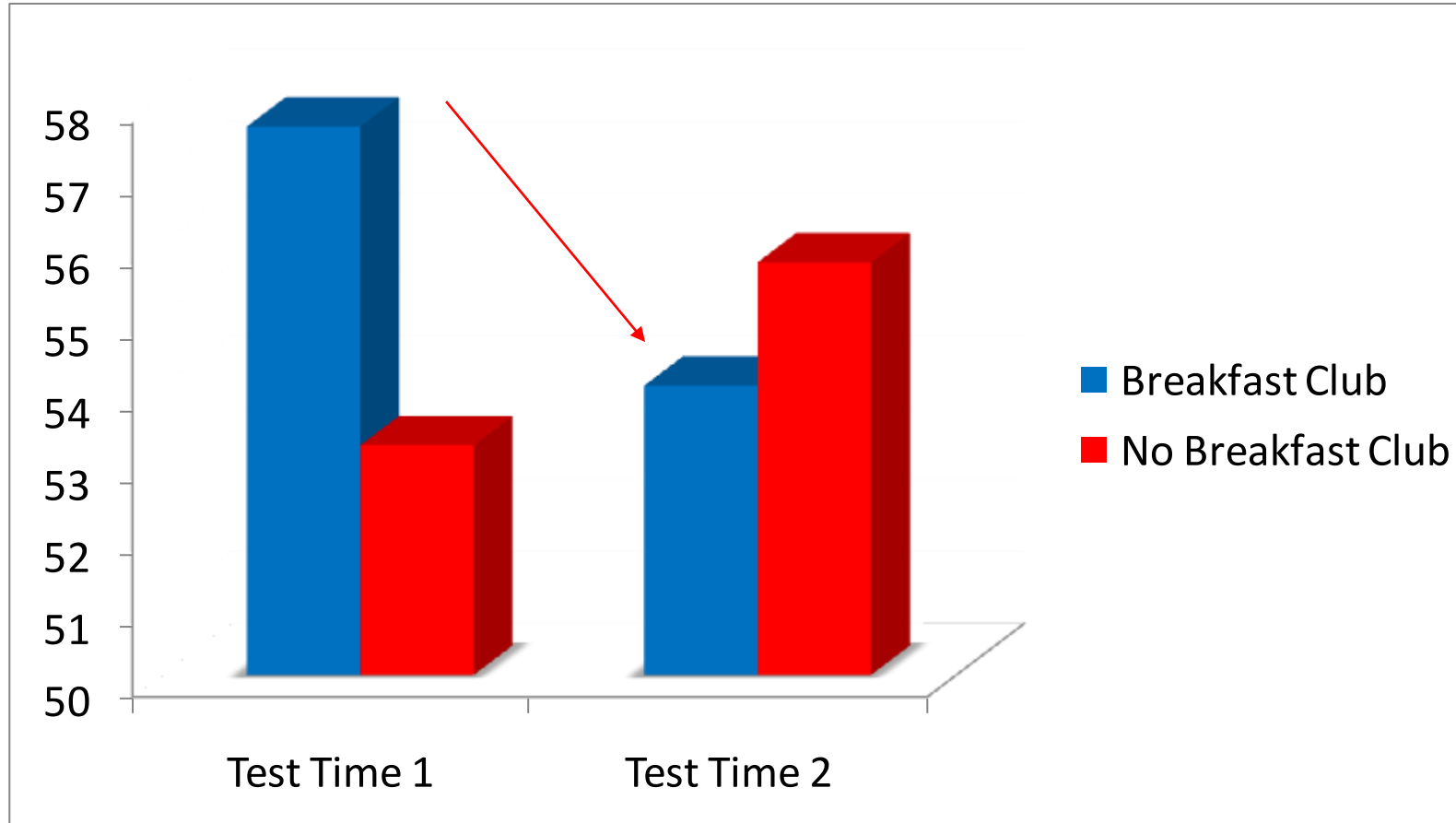
Trails A (% Correct)



Trails B (% Correct)



Number Search Task (Errors)



Pupil Friendship Questionnaire

Measure	Condition	Difference Score	Significant
Companionship	Breakfast Club	0.02 (0.22)	t(24) + 2.02, p = 0.028
	No Breakfast Club	-0.55 (0.12)	Lopsided Test Alpha = 0.045
Conflict	Breakfast Club	-0.22 (0.32)	t(26) = -0.076, p = 0.47
	No Breakfast Club	-0.19 (0.21)	Lopsided Test Alpha = 0.045
Help	Breakfast Club	-0.13 (0.14)	t (23) = -0.749, p = 0.230
	No Breakfast Club	0.05 (0.19)	Lopsided Test Alpha = 0.045
Security	Breakfast Club	0.02 (0.20)	t(26) = -0.680, p = 0.251
	No Breakfast Club	0.21 (0.19)	Lopsided Test Alpha = 0.045
Closeness	Breakfast Club	0.30 (0.21)	t(26) = 1.050, p = 0.152
	No Breakfast Club	-0.21(0.20)	Lopsided Test Alpha = 0.045.

Teacher Relationship Questionnaire

Measure	Condition	Difference Score	Significance
Conflict	Breakfast Club	-0.43 (0.23)	t(23) = -.883, p = 0.193
	No Breakfast Club	-0.18 (0.12)	Lopsided Test Alpha = 0.045
Help	Breakfast Club	0.00 (0.00)	t(19) = 3.678, p = 0.001
	No Breakfast Club	-0.55 (0.16)	Lopsided Test Alpha = 0.045
Security	Breakfast Club	0.60 (0.21)	t(24) = 3.115, p = 0.0025
	No Breakfast Club	-0.32 (0.18)	Lopsided Test Alpha = 0.045
Approachableness	Breakfast Club	0.43 (0.16)	t(24) = 1.913, p = 0.034
	No Breakfast Club	-0.13 (0.25)	Lopsided Test Alpha = 0.045
Communication	Breakfast Club	0.53 (0.38)	t(25) = 1.470, p = 0.077
	No Breakfast Club	-0.18 (0.19)	Lopsided Test Alpha = 0.045

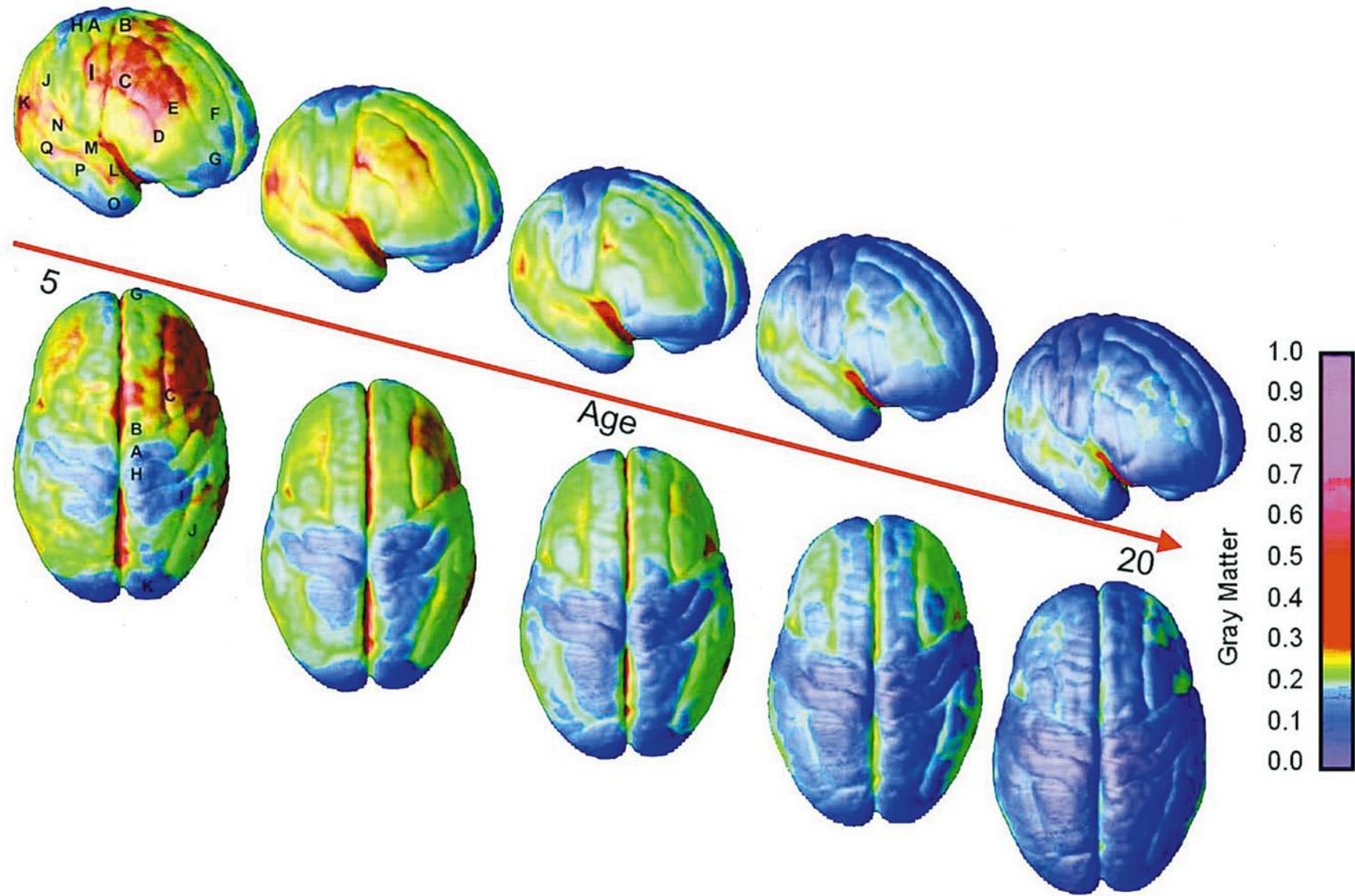
Study 2: Does it matter what children eat for breakfast?

Aims

- a) Does the glycaemic index of breakfast have an effect on cognitive performance?

Prediction: low rather than high GI breakfast more beneficial to performance, particularly in late morning

- b) Are the effects found across all cognitive functions or restricted to particular processes?



Brain Maturation as a Factor of Age

Participants

✎ Three age groups:

7-year-olds (N = 18)

Mean age 7:2 (range 6:3-7:11); 10 females, 8 males

9-year-olds (N = 23)

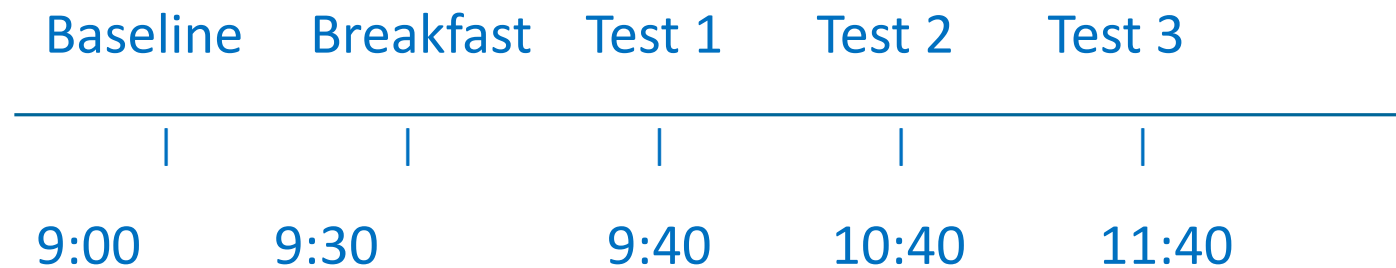
Mean age 9:1 (range 8:2-9:11); 10 females, 13 males

11-year-olds (N = 23)

Mean age 11:0 (range 10:0-11:7); 18 females, 5 males

Procedure

- 📌 Two consecutive days
- 📌 High GI: Coco Pops
(35g with 125ml semi-skimmed milk)
- 📌 Low GI: All Bran
(35g with 125ml semi-skimmed milk)



Procedure

Cognitive Drug Research (CDR)

Computerized Assessment Battery (Wesnes et al, 2003)

Word Presentation

Immediate Word Recall

Picture Presentation

Simple Reaction Time

Digit Vigilance

Choice Reaction Time

Spatial Working Memory

Numeric Working Memory

Delayed Word Recall

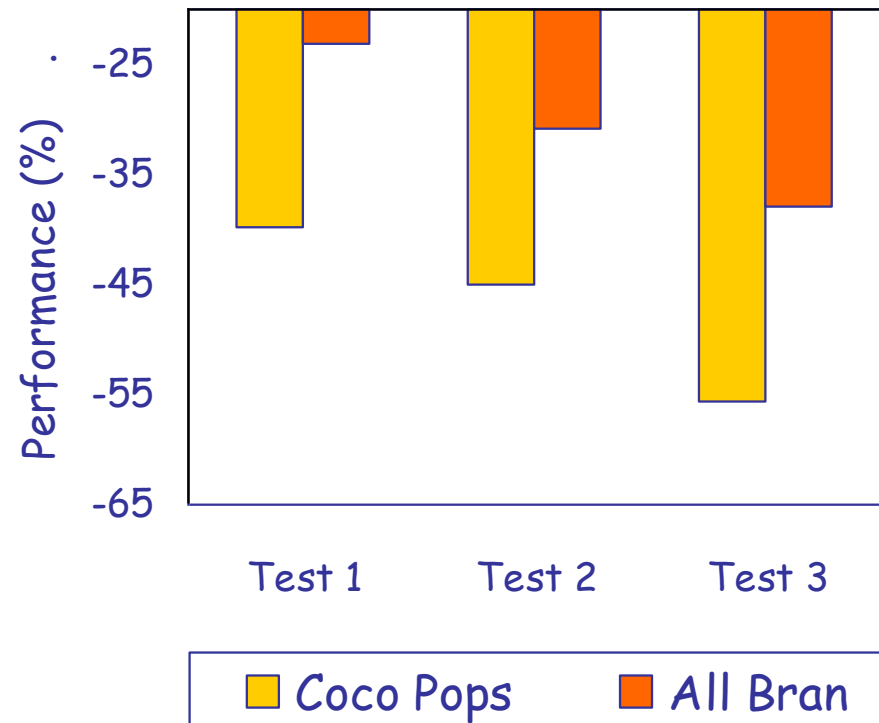
Delayed Word Recognition

Delayed Picture Recognition



Results

Episodic Memory

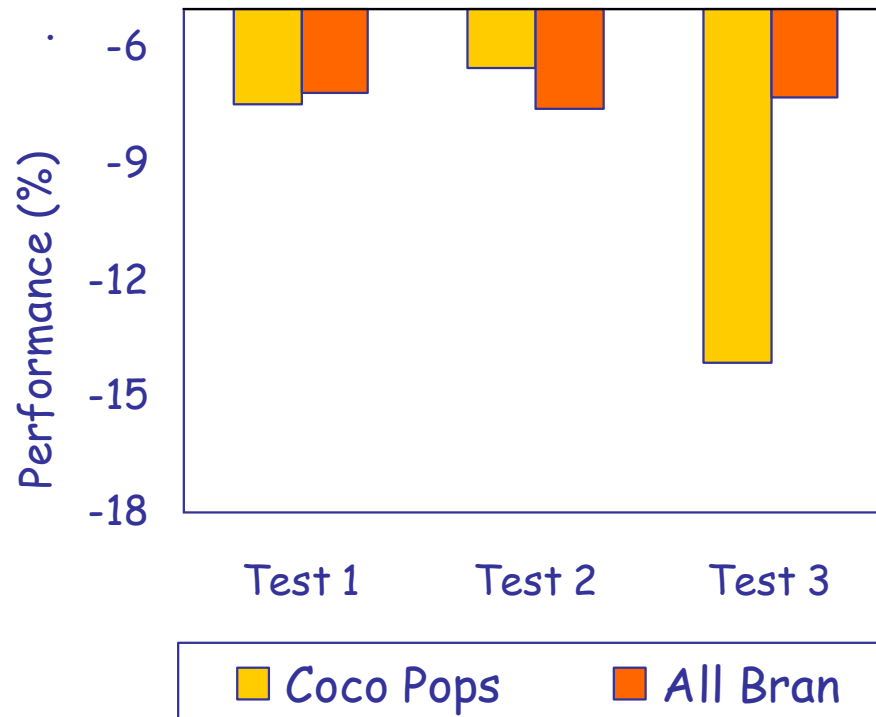


Main effect of Breakfast $F(1,61) = 5.313, p < 0.05$

Significantly smaller decline in performance after consumption of low GI All Bran compared to high GI Coco Pops

Results

Sustained Attention



Breakfast * Assessment Time
 $F(2,122) = 3.820, p < 0.05$

Significant decline in performance on Test 3 after consumption of high GI Coco Pops compared to low GI All Bran

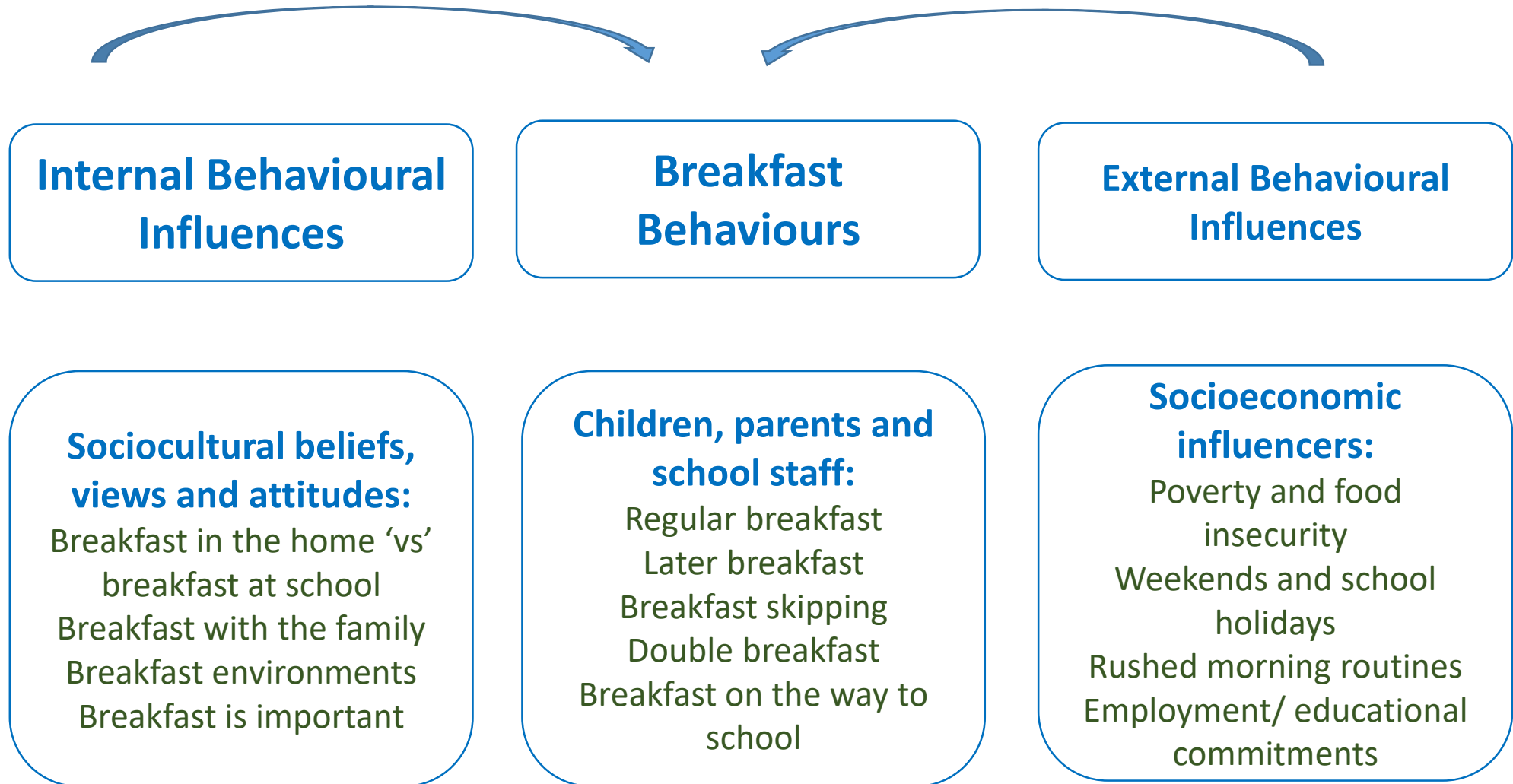
Discussion

- a) Low GI breakfast better than high GI breakfast for children's cognition.
- b) The effects are consistently found across for episodic memory and attention.

Study 3 – A Qualitative Model

- Qualitative Grounded Theory Design
- 47 Stakeholders
 - Children, parents and school staff affected by Blackpool Council USFB scheme.
- In-depth semi-structured interviews and focus groups

A Qualitative Model for Breakfast Behaviours



Breakfast Behaviours

Habitual Breakfast

“I think it’s just in your routine, it’s just part of what you do, you get up, have a shower, get your breakfast”

Skipping Breakfast

“I feel a bit yucky and dizzy [...] you’ve just got no energy, nothing”

“They can be more sluggish, [...] grumpiness and they’re lethargic”

Double Breakfasting

“Other children who eat at home, go to early birds, have their breakfast there, come in school have their breakfast there and by then break might have a piece of fruit”

Sociocultural Beliefs about Breakfast

Home vs School

“Once you stop actually giving them breakfast at home you’re starting on a lazy path there. Oh I won’t bother, let school do it”

“Knowing that their tummy’s full and then you’re not going to worry when they’re at school that they’re hungry - I know that she’s had enough”

“As long as the person’s getting a decent healthy, well fairly healthy anyway meal, it doesn’t really matter”

Breakfast with Family

“You’re sat bonding with your kids sat having something to eat”

“You’re eating with your mum and dad at home so it makes you feel even more comfortable”

“This is what goes wrong in our days with people, they don’t sit at a table and eat their meals together”

“I know it’s hard for some parents”

External Factors: Poverty and Food Insecurity



“It’s such a poor deprived area, and people just can’t afford food. There’s food banks in the area”



“We’re in a deprived area so for whatever reason a lot of children come to school without breakfast”



“You know certain children and you think what’s going to happen to them over the holidays. You’re worried, are they getting fed, and probably the answer is no, they’re not and it must be hard for children as well”

Holiday Hunger





- More than 93% adults skipped meals (Poverty & Social Exclusion, UK, 2013)
- 54% increase in Food Bank 2012-2014
- Ashton & Lang (2014) Food prices risen by 12% and wages fallen by 7.6% since 2007
- Coe (2014) Increase in fat, salt and sugar consumption

Child Poverty in UK

- Lack Capital (Townsend, 2014)
- Lack Human Capital
- 3.7M children living in poverty in UK (costing £29bl PA)
- IFS projects CP will be in region of 30.5% by 2020(4.3M)
- Cost of child care 2008 -14 - Child care up 42%
- CB cut, tax credits slashed
- Rise in child poverty within working families



Child Poverty: Human Capital

- Education: FSM 3 terms lag behind affluent peers in terms of educational attainment but age 14 this gap grows to over five terms (DfE)
- Health: low birthweight; premature death, Type II Diabetes, dental carries (Hirsch, 2013)
- Housing (x2): Poor Housing, multiple occupancy
- Fuel Poverty (Hills, 2011)

Challenges for Families in Holidays

- *FSM unavailable (1.7 million in UK)*
- *Pressure on household budget*
- *Benefit delays ,sanctions*
- *Safeguarding risk elevated*
- *Access /availability to food*
- *Social contact diminished*
- *Family Stress*

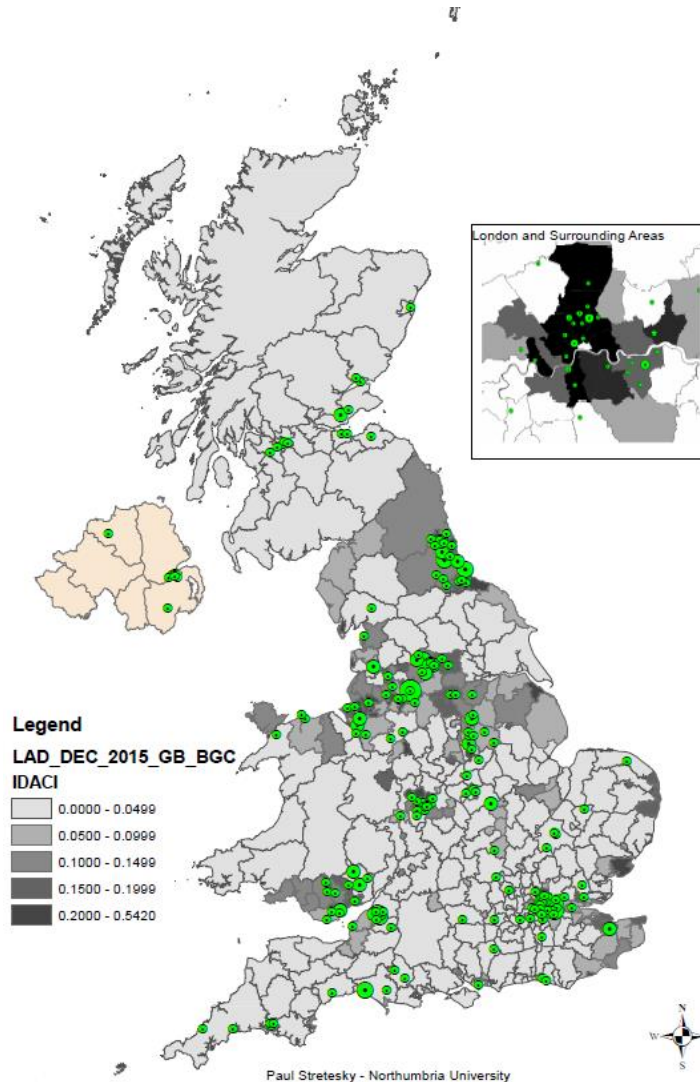
(Extra £30 - £40 per week)

Children's Society Fair and Square



Holiday Hunger in Scotland

- 2015: 39.2% children living in poverty (after housing costs)
- Child care: one week holiday childcare in Scotland (£104 per week)
- Food: 38.8% primary school children in receipt of free school meals



Mapping of
holiday provision
programmes by
childhood
deprivation across
local authorities
428 Organisations

Study 5: Summer Learning Loss (Shinwell & Defeyter, in press)

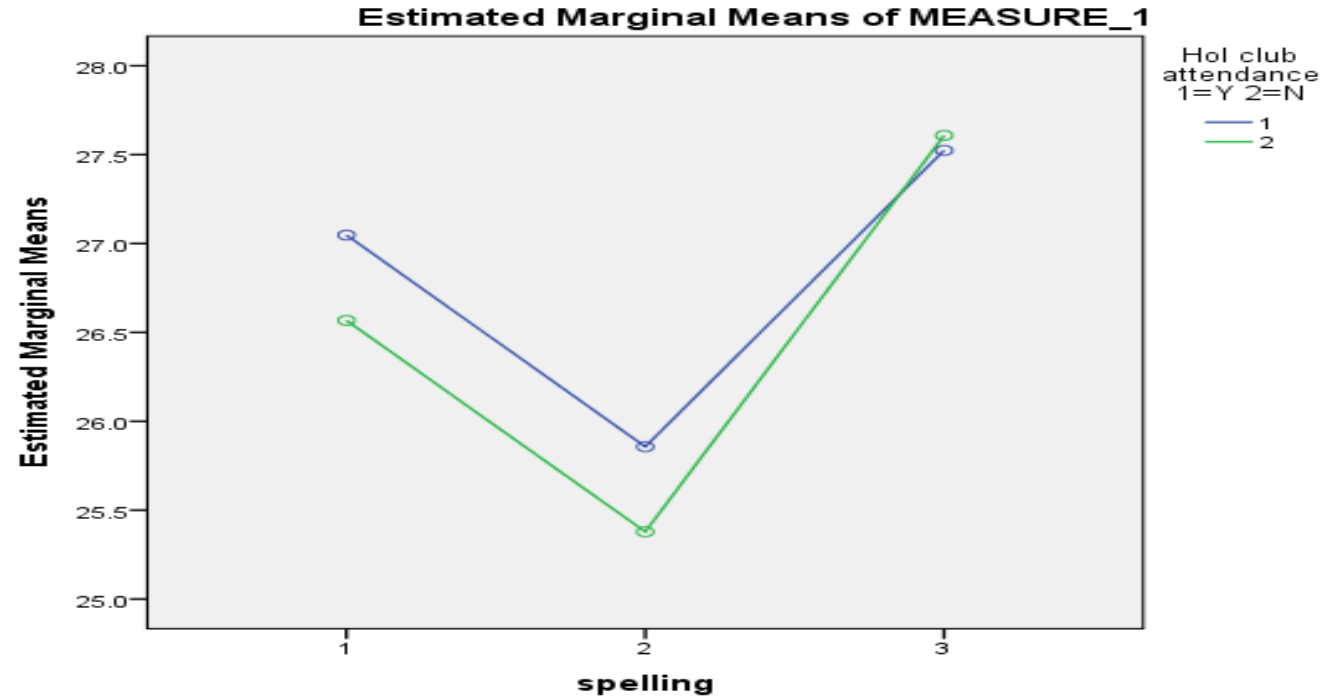
- Prior research in USA ...1 month's instruction (Cooper, 1987)
- Aim
 - Investigation of the phenomenon of "Summer Learning Loss"
- Study Design
 - 1 x 3 mixed factorial design
 - Time - Three levels: Time 1- end of summer term; T2 – start of autumn term & T3 - 7 weeks later
- Dependent Measures
 - Scores in WRAT 4 literacy test (Reading and Spelling)

Study 3: Summer Learning Loss

- Participants
 - N = 121 (6-8 year olds)
- Data Analysis
 - Repeated Measures ANOVA
 - Post-hoc Analyses

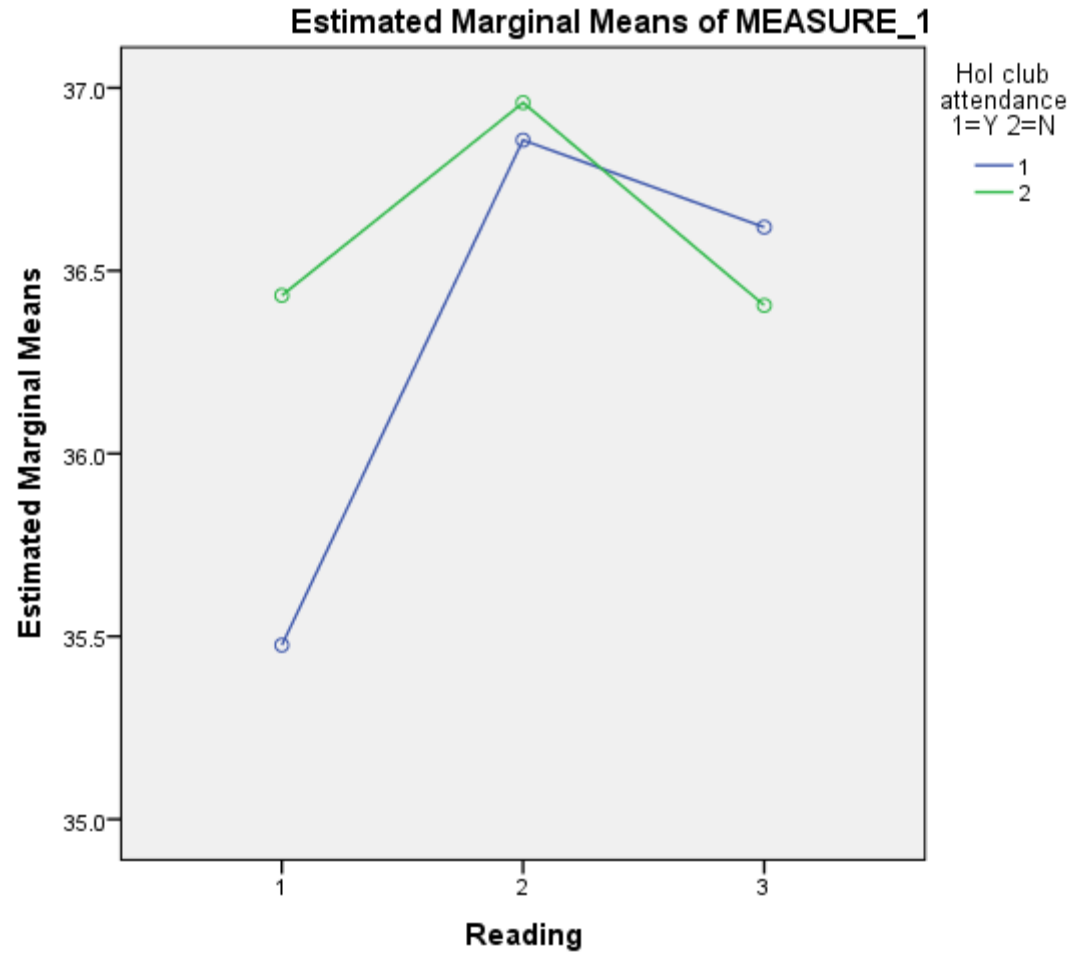


Results: Spelling



		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Dviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	T1 Spelling total 1 - T2 Spelling total 2	1.237	2.686	.436	.354	2.120	2.839	37	.007
Pair 2	T2 Spelling total 2 - T3 Total Spelling 3	-2.684	2.886	.468	-3.633	-1.736	-5.733	37	.000
Pair 3	T1 Spelling total 1 - T3 Total Spelling 3	-1.447	2.446	.397	-2.251	-.643	-3.647	37	.001

Results: Reading



Children's Food Diaries (A Day in the Life Questionnaire)



(FRAC, 2012; Early Childhood Longitudinal Study (von Hippel et al., 2007))

5. What did you do when you got home from holiday club yesterday?
 (Please draw a circle around the correct answer - if you did more than one thing, put a circle around everything you did)



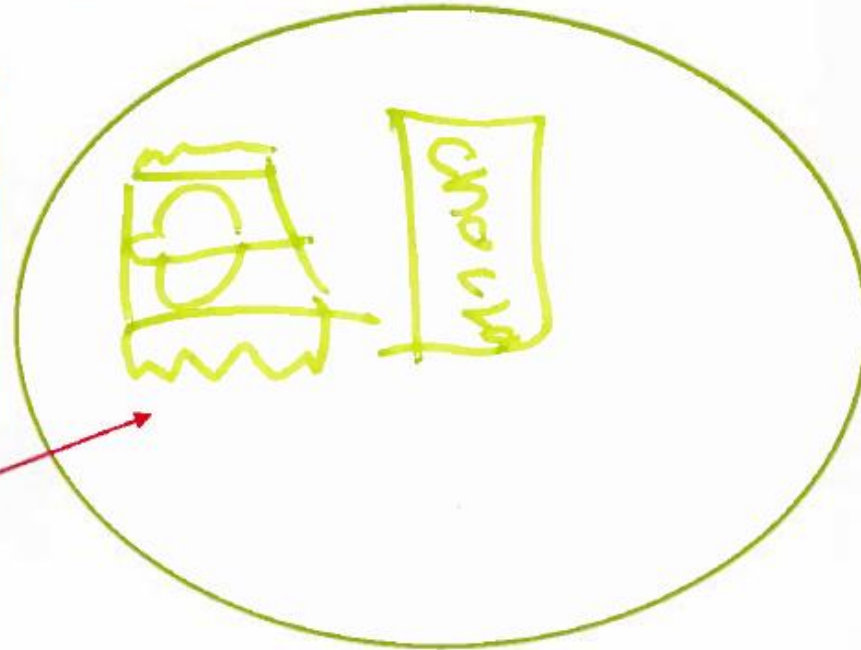
Played on the computer	Listened to music	Went out	Played out	Arts and crafts	Watched TV
Or did you do something else? What else did you do?		Washed cars			

6. Did you eat or drink anything when you got home but before your evening meal yesterday? Please tick (✓) Yes or No:

Yes No

If you said yes, please write and draw what you had:

I had:
Chips and chocolate
69
I drank:



If you had something to eat after you got home but before your evening meal, draw it here.

Conclusion

- School breakfast clubs can facilitate gains in cognitive performance/educational attainment
- Facilitate quality of children's friendships
- WHAT children eat and WHEN is an important factor
- Potential impact on when subjects are taught across the school day
- Consultation with all key stakeholders important
- Child's Voice

- Need for holiday food provision (mapping exercise)
- Widespread provision but piecemeal, unregulated
- Potential to help combat obesity/other health issues
- Community Engagement
- Flexible model
- Evidence of Summer Learning Loss (spelling)
- Evidence of clubs facilitating reading (a focus of the clubs we investigated)
- Food (Diaries) and Physical Activity (MVPA)

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 Professor Riccardo Russo
 Dr Michael Long
 Dr Julie Young
 Dr Pamela L Graham
 Dr Louise Harvey-Golding
 Dr Jeanet Ingwersen
 Jackie Shinwell
 Emily Mann



School holiday food provision in the UK: A qualitative investigation of needs, benefits and potential for development



Hungry Holidays

A report on hunger amongst children during school holidays



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Universal Free School Breakfast: A Qualitative Process Evaluation According to the Perspectives of Senior Stakeholders

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A qualitative evaluation of holiday breakfast clubs in the UK: views of adult attendees, children, and staff

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