

Effect of Breakfast on Cognitive & Mental health and attainment: implications of food insecurity & the cost of living crisis

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Overview



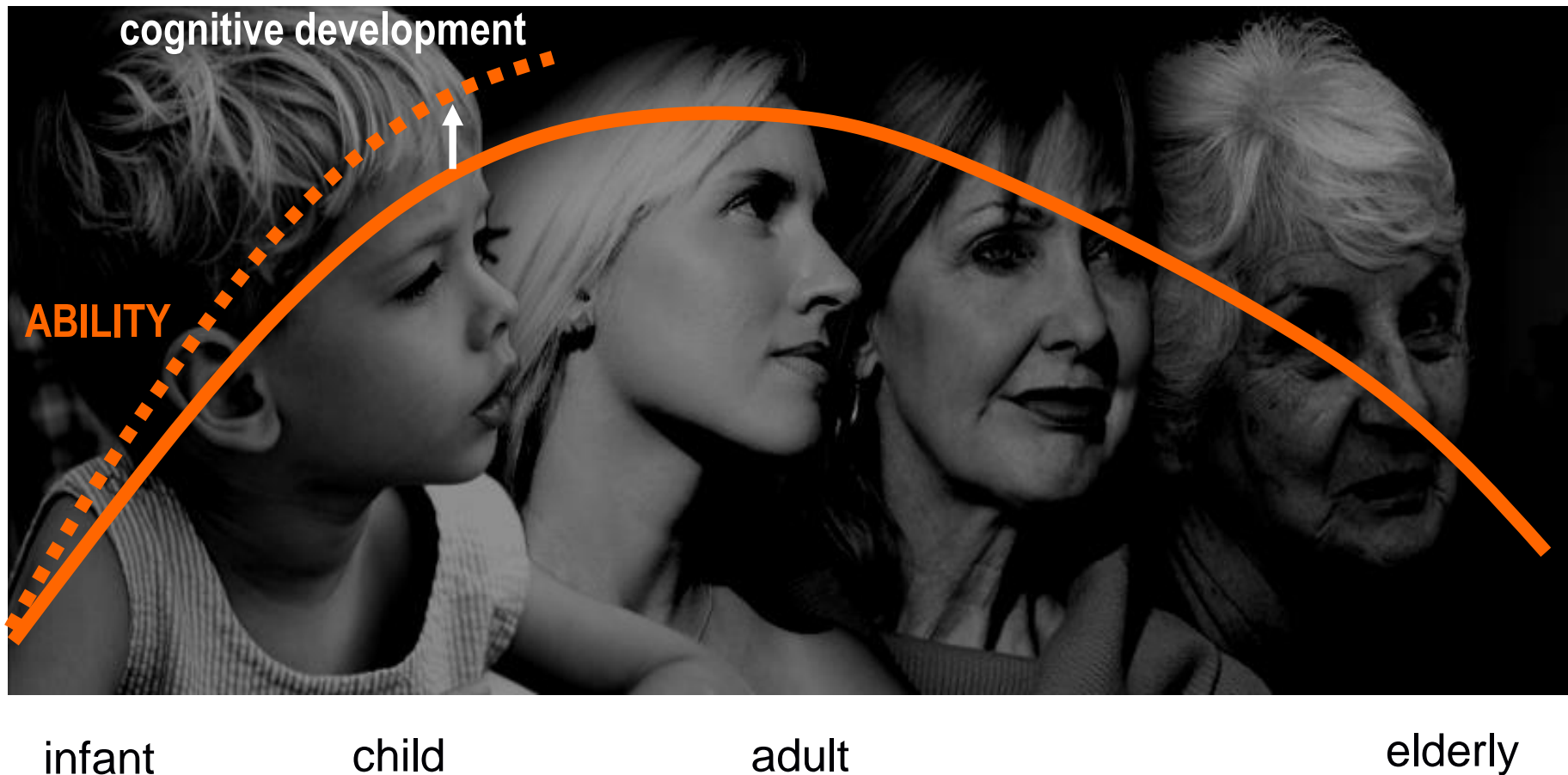
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1. How to support/maintain cognitive function in children/adolescents – focus on breakfast
2. What is the impact of food insecurity on psychological wellbeing?

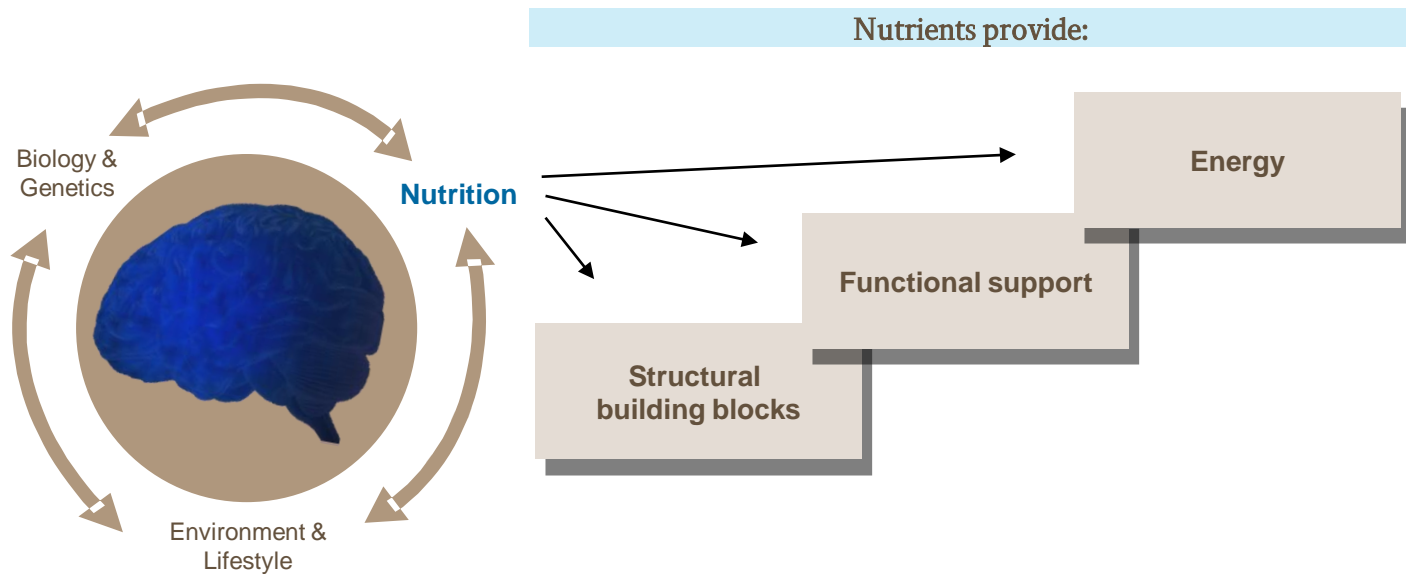
Cognition throughout life



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Nutrition is one of the most *influential & modifiable* factors in brain, mental and cognitive health^{1,2}



¹Le Coutre, J & Schmitt, J (2008). Food ingredients and cognitive performance. *Current Opinion in Clinical Nutrition & Metabolic Care* 11:706-710.

²Gomez-Pinilla 2008. *Nat Rev Neurosci*. 2008 July ; 9(7): 568-578. doi:10.1038/nrn2421



The Effects of Breakfast and Breakfast Composition on Cognition in Children and Adolescents: A Systematic Review^{1–3}

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ABSTRACT

Breakfast is thought to be beneficial for cognitive and academic performance in school children. However, breakfast is the most frequently skipped meal, especially in adolescents. The aim of the current review was to systematically review the evidence for the effects of breakfast on cognitive performance in children and adolescents from intervention studies. The effects of breakfast were evaluated by cognitive domain and breakfast manipulation. A total of 45 studies reported in 43 articles were included in the review. Most studies considered the acute effect of a single breakfast ($n = 34$). The acute studies were breakfast compared with no breakfast ($n = 24$) and/or comparisons of breakfast type ($n = 15$). The effects of chronic school breakfast program interventions were evaluated in 11 studies. The findings suggest that breakfast consumption relative to fasting has a short-term (same morning) positive domain-specific effect on cognition. Tasks requiring attention, executive function, and memory were facilitated more reliably by breakfast consumption relative to fasting, with effects more apparent in undernourished children. Firm conclusions cannot be made about the acute effects of breakfast composition and the effects of chronic breakfast interventions because there are too few studies and these largely report inconsistent findings. This review also highlights methodologic limitations of the existing research. These include a lack of research on adolescents, few naturalistic breakfast manipulations or testing environments, small samples, and insensitive cognitive tests. *Adv Nutr* 2016;7:15–235.



Results: Acute effects of BF vs. no BF

Overall advantage of breakfast vs. no breakfast

- Transient beneficial effect on cognitive function
 - 20/24 studies: positive effect of BF
 - The majority were grain-based breakfasts
- Post-ingestion effects +10 min to +210 min
- Range of energy loads (95 Kcal – 590 Kcal) and foods
- Observed effects: enhancement and maintenance of performance

Domain specific effects

- Attention, memory, and executive function

Undernourished children

- Advantageous effects more apparent in undernourished children



Adolphus, K., Lawton, & Dye, L. (2013). The effects of breakfast on behaviour and academic performance in children and adolescents. *Frontiers in Human Neuroscience* 7. doi:10.3389/fnhum.2013.00425



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Nutritional influences on human neurocognitive functioning [View all 14 Articles >](#)

REVIEW ARTICLE

Front. Hum. Neurosci., 08 August 2013 | <https://doi.org/10.3389/fnhum.2013.00425>

The effects of breakfast on behavior and academic performance in children and adolescents

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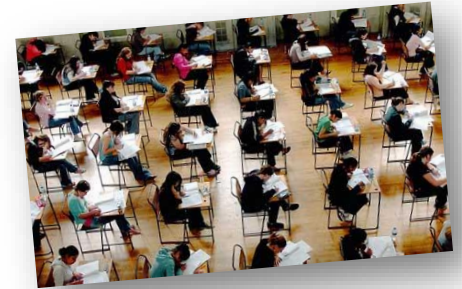
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Positive association between HBC and academic performance

- HBC frequency was positively associated with academic performance
- Some evidence that HBC composition is related to academic performance

Subject specific effects

- Mathematics grades or test scores



Consistent across all socio-demographic groups

- The effects were not modulated by socio-demographic characteristics



Children who rarely eat breakfast secure lower GCSE grades than classmates, study finds

'Britain has growing problem of food poverty,' academics warn

Eleanor Busby Education Correspondent • Wednesday 20 November 2019 08:19

Comments

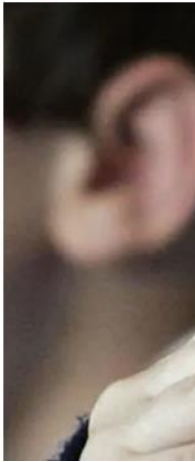
Education

Teenagers who miss breakfast get worse GCSE grades, study finds

Researchers warned that the rising number of young people going

Children who ate breakfast regularly achieved an average of 2 GCSE grades higher than children who rarely ate breakfast

Adolphus, Lawton & Dye, *Frontiers in Public Health* (2019)



Adolphus, Lawton & Dye, *Frontiers in Public Health* (2019)

Breakfast Consumption in Food Secure & Food Insecure CYP (MHMS survey, Leeds)



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Secondary school pupils higher frequency of BF skipping

2018 Food insecure more likely to rarely eat BF
(43.4% of FI vs 19.6% FS)

2019 Food insecure more likely to never/rarely eat BF
(52.5% of FI vs 22.5% FS)

2020 Food insecure more likely to never/rarely eat BF
(48% of FI vs 19% FS)

In 2020 primary CYP significantly more likely to never/rarely eat BF
14% of FI vs 6.5% of FS;

Everyday BF consumption in FI 43% vs 68% in FS

Breakfast consumption

- helps to ensure nutritional adequacy in school-aged children
- associated with better nutritional profiles of children who habitually skip breakfast



Breakfast skipping is associated with:

- Increased levels of snack food consumption
- increased likelihood of being overweight or obese

Defeyter, Graham, Walton & Apicella (2010) *Nutr Bull*, 35, 245–253

Benefits of School Breakfast Programs



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Key Stage 1 (KS1) pupils in schools with a universal, free school breakfast provision made an additional **two months academic progress**.

Education Endowment Foundation (EEF) & Institute for Fiscal Studies (IFS)



Education
Endowment
Foundation

- Significant positive effects on growth & cognitive performance of disadvantaged children
- Benefits of SBF attendance for mental performance & social development in UK
- Effects more pronounced in deprived areas
- **Breakfast programs led to improvement mainly in maths or arithmetic scores**

Hoyland, Dye & Lawton (Nutr. Res. Reviews 2009) Defeyter, Graham, Walton & Apicella (2010) *Nutr Bull*, 35, 245–253

Adolphus, Lawton, Champ & Dye (2016) *Adv Nutr*.

Louise Dye, HARU, Leeds



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The School Breakfast Bill





The School Breakfast Bill

- Legislation which if passed, will require all state-funded primary and secondary schools in England to provide children with access to a healthy school breakfast.
- The Bill gives schools with significant evidence of need (at least 50% of pupils in IDACI bands A-F) support to provide a free breakfast meeting SFS to all children.
- Funding will cover the costs of food, delivery, and additional staff time.
- The Bill would also provide additional funding for school breakfasts to schools which do not have 50% of pupils in IDACI bands A-F if a school requests it.



What next? FSM and the School Breakfast Bill

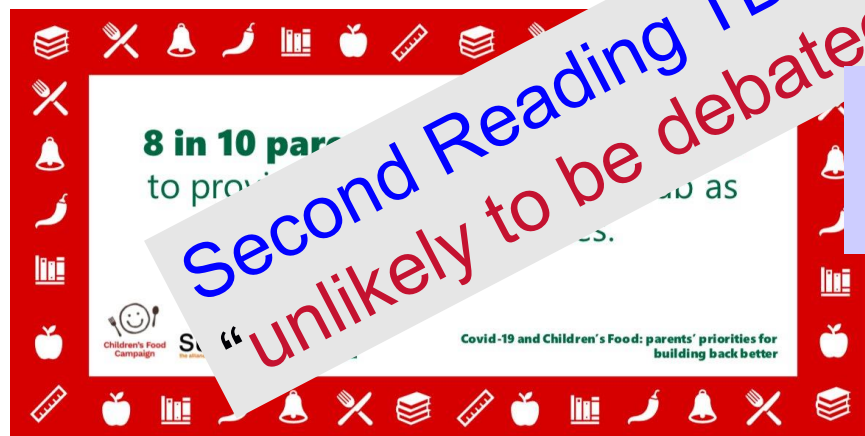


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2.2 million children are receiving Free School Meals, 42% of these children newly registered amid the pandemic (FoodFoundation, 2020)



Second Reading TBC 2021
"unlikely to be debated" Hilary Benn



2022-Kicked into the long grass
Back to square 1

1. Evidence led
2. Value for money (£95m pa)
3. Simple, focussed effective intervention



Andrew Griffith MP (Cons)

Research Priorities & Interests



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1. Support/maintain cognitive function at all stages of life
2. What is the impact of food insecurity on psychological wellbeing?



Food insecurity - 3 questions –Shropshire survey

- Food Insecure (FI) or Food Secure (FS)
- Effect on Psychological Wellbeing (PsyWB)

My School, My Health - Leeds survey -2018-2020 (3 years of data)

- Relationship between FI and Psy WB

FI and adverse life circumstances

Importance of interventions

- BF - & academic outcomes (SRR and GCSE)
- Covid BF intervention – Shropshire
- FSM – related to PsyWB, uptake & stigma
- HAF- Holiday Activities and Food programme (Clara)

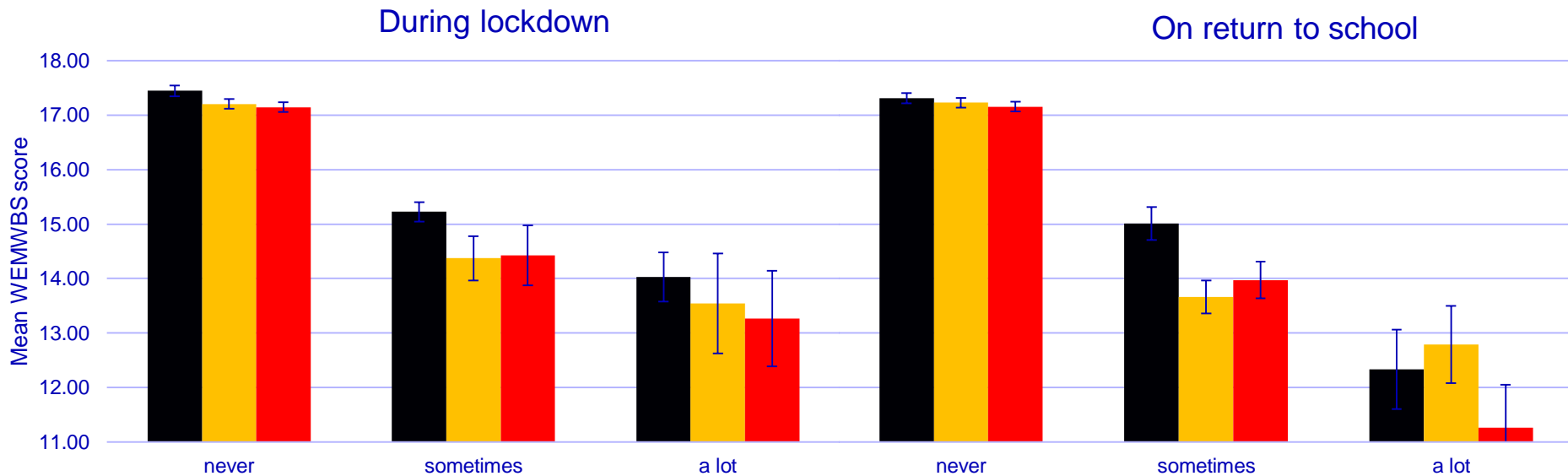
Food insecurity



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Food Insecurity- 3 questions scored from 0-2 (never, sometimes, a lot)

- Q1 Did you worry about not having enough food ? 24.5% during lockdown - 10% return to school
- **Q2 I didn't go hungry but I think my mum or dad or carer did miss meals because there wasn't enough money for food** 10%- 5%
- **Q3 Were you hungry but didn't eat because your family didn't have enough food?** 11%-6%

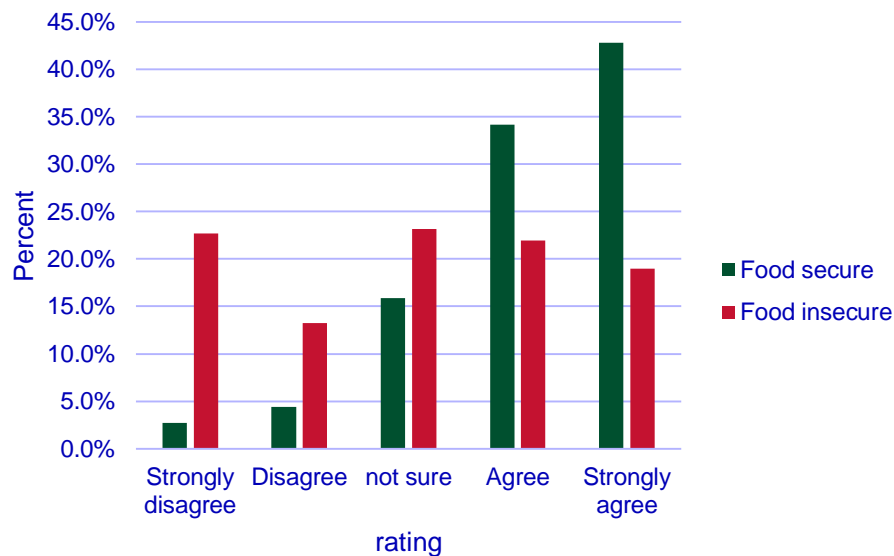


Leeds: MHMS 2018-19: Wellbeing in children who report worrying about not having enough food at home

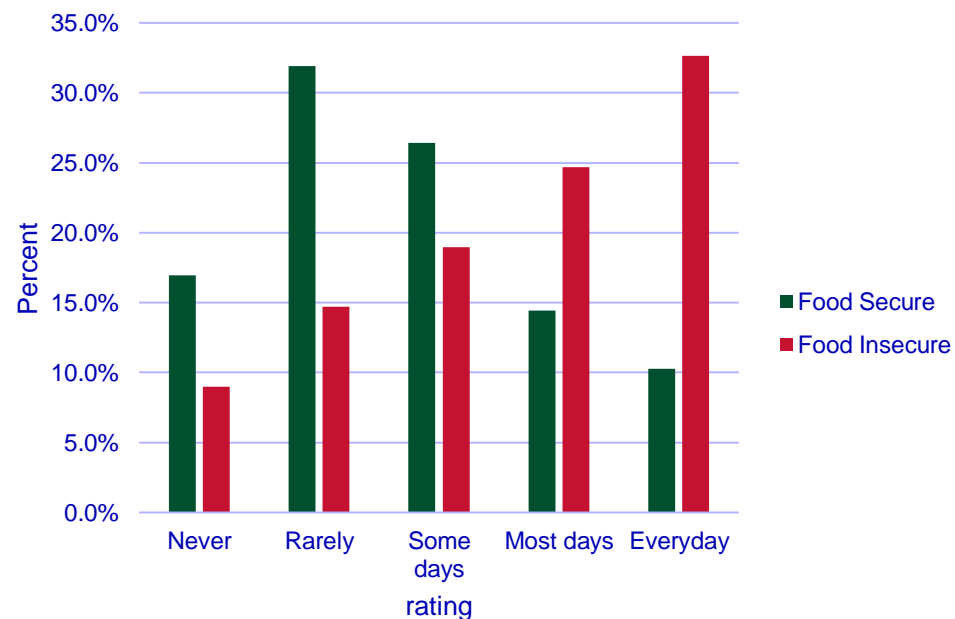


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I enjoy life



I feel stressed or anxious





MHMS year on year consistent trends

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	ODDS ratio relative to Food Secure peers
Experience negative emotions	3-4
Be less able to cope with negative emotions or enjoy life	2-3
Self harm (40-69% vs 20% FS)	5
Experience positive emotions	2-3
Care for someone	2-6
Feel unsafe at home	7-11
Never or rarely eat breakfast (33-48% vs 13.5-20%)	4

Caring Responsibilities in Food Insecure CYP (MHMS, Leeds)



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Care for someone in family with:	2018 OR	2019 OR	2020 OR
Drug/alcohol problem	3	5.9	5.9
Disability	2	2.3	2.6
Mental health problems	3	3.2	4.5
Illness	1.5-2	2.8	1.9
Younger sibling	1.5		1.4
Other reason	2x	2.8	3.6

Odds ratio compared to food secure peers

(based on secondary school CYP)



The Importance of Interventions

Breakfast

- Evidence, School BF Prog, School BF Bill

Free school meals

- National Food Strategy recommendation – widen eligibility

Holiday Activities and Food (HAF) programme (Holiday Hunger)

Community Interventions

Health by Stealth - reformulation



The breakfast boost intervention: a two-week, universally free, return-to-school breakfast intervention following the CV-19 lockdown school closures





Comments from suggested that the free breakfast had a range of positive effects on hunger, energy levels, mood and concentration:

“Not being hungry during lessons”

“Having some food at 9am gives more energy”

“It made me feel happy”

“It helps me work and concentrate when my tummy is full”

Students also noted that the free breakfast was important for those who usually skipped breakfast or couldn't afford it:

“Not being hungry during lessons because I can't afford anything because of how high the prices are”

“great for those who don't get to eat breakfast before school...provides valuable nutrition for those who need it.”

“saved me spending too much money at break time because of the high prices I didn't want my parents to have to spend so much money on my lunch!”

Conclusion



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Sufficient, safe, nutritious food important for cognitive and psychological wellbeing - especially in children & adolescents

Food insecurity poses a significant threat to wellbeing/nutritional adequacy

Strategies to improve dietary intake need to take into account the financial constraints and low agency of low income consumers

Health by stealth/reformulation & biofortification are promising strategies

Need wider evaluation of (informal) interventions –health, psychological and cost effectiveness



Thank You

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