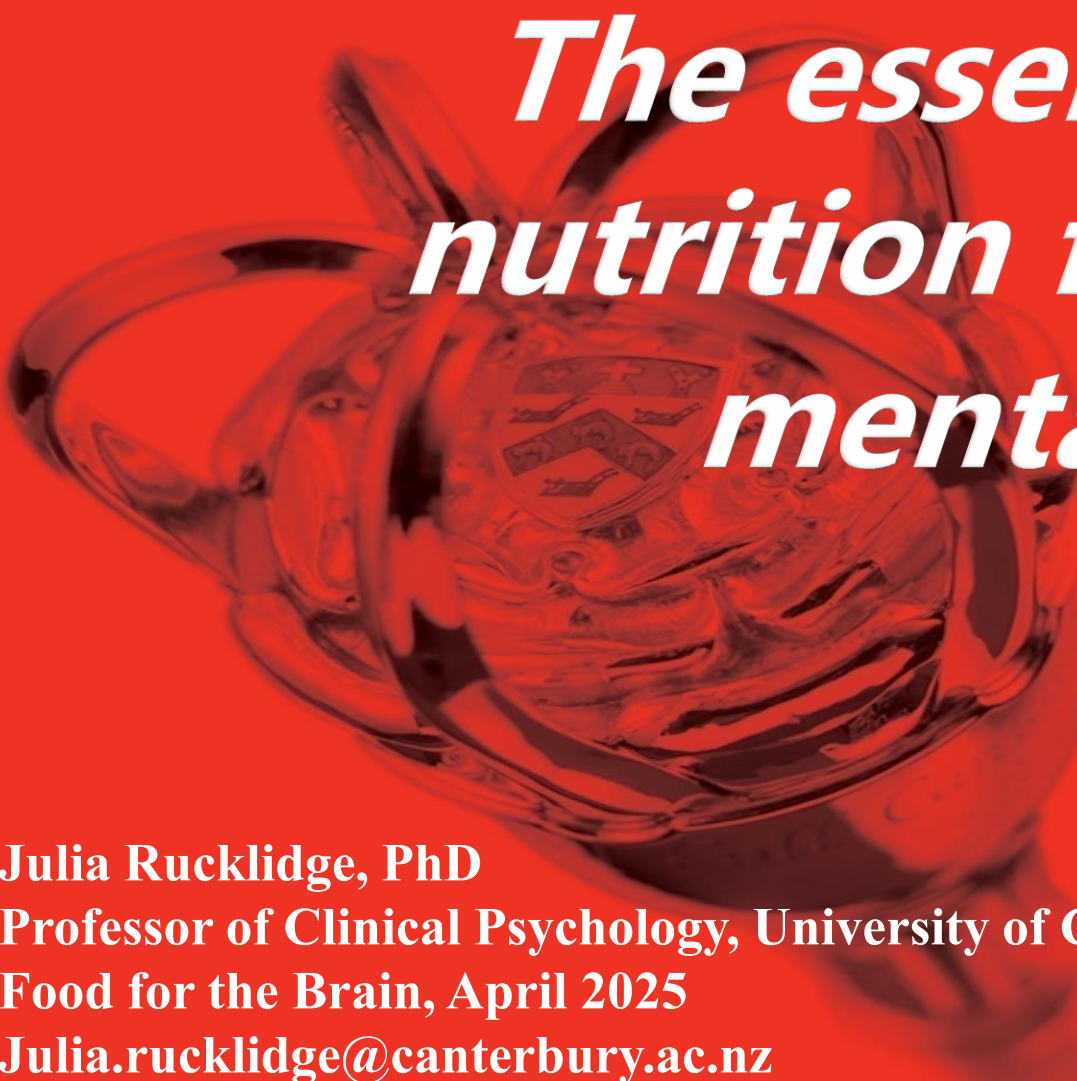
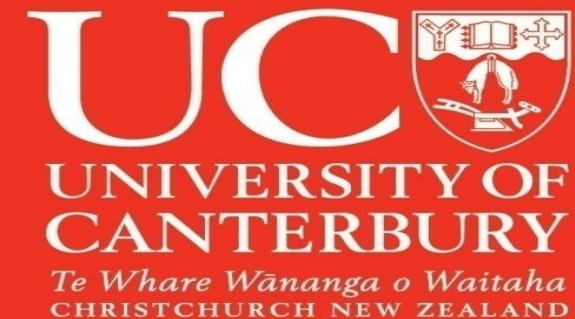




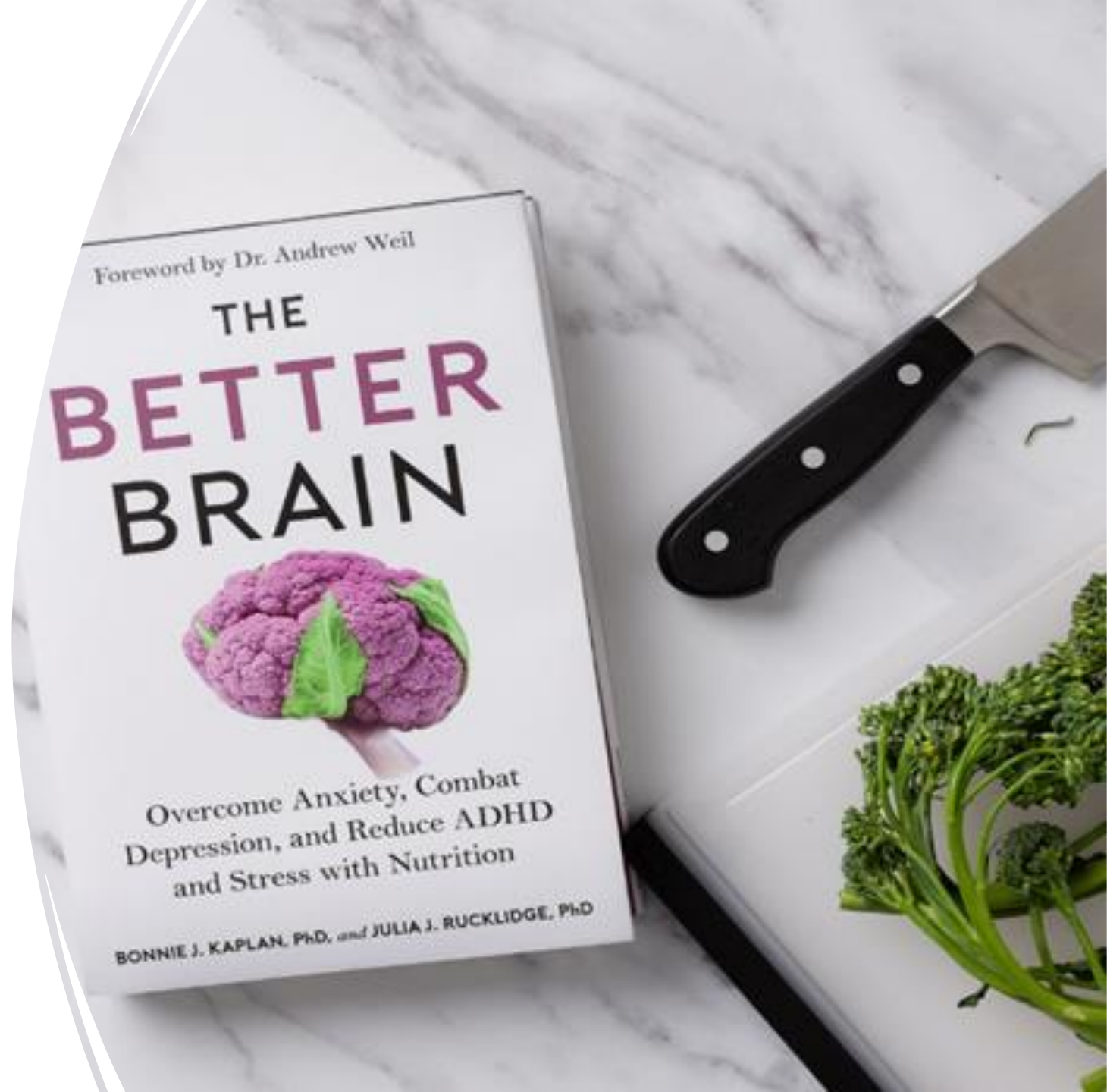
The essential role of nutrition for children's mental health

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Food for the Brain, April 2025
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 - GAMA Foundation
 - Foundation for Excellence in Mental Health Care
- Royalties from Harper Collins/PenguinRandomHouse for sales of The Better Brain
- No current or past funding from the companies that make products researched



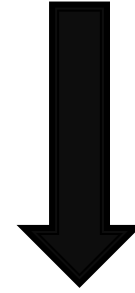
***Dietary patterns and
mental health in the
21st century***



+



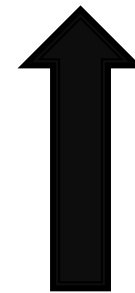
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Mental illness



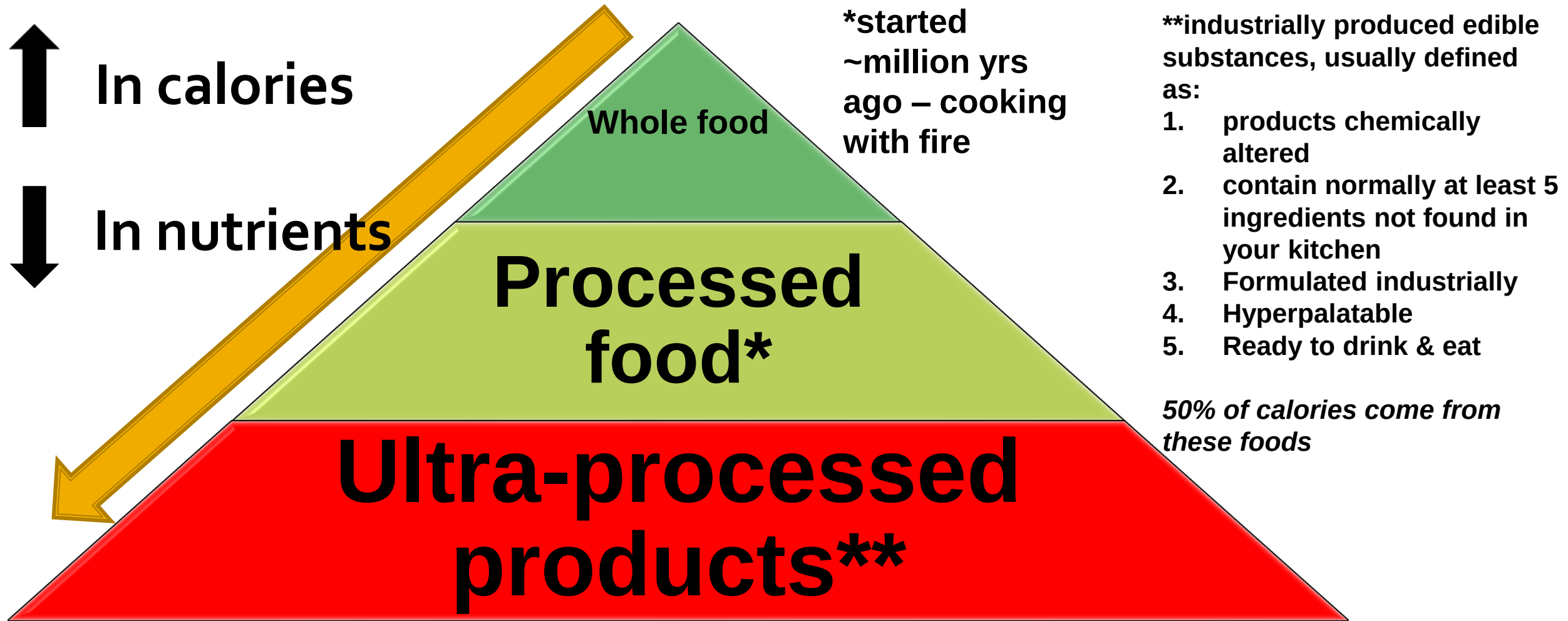
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Mental illness

Photo credits: Elana Amsterdam, Sandy Austin, Christian Cable on Flickr

We have shifted our food choices....



What's *likely*
wrong with
UPF?



Artist: Susan Prescott



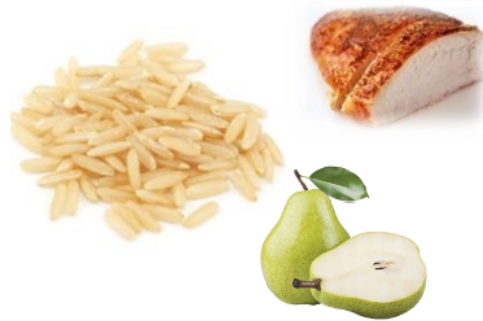
TRACE study: Treatment of ADHD: Elimination diet (n=84) vs Healthy Diet (n=81) vs nonrandomised care-as-usual (n=58)

Huberts-Bosch et al., 2023; *European Child & Adol Psychiatry*

5-week elimination phase, children followed standardized ED supervised by dietician:

1. food allergens [proteins from milk, egg, wheat, fish (including shellfish and mollusks), soy, peanuts, and nuts] eliminated
2. potential food triggers (gluten and histamine-releasing, or histamine-containing products) reduced
3. sugar intake restricted in elimination phase

Elimination diet



Healthy diet



Both diets are potentially effective ^[1, 2]
& supervised by dietician

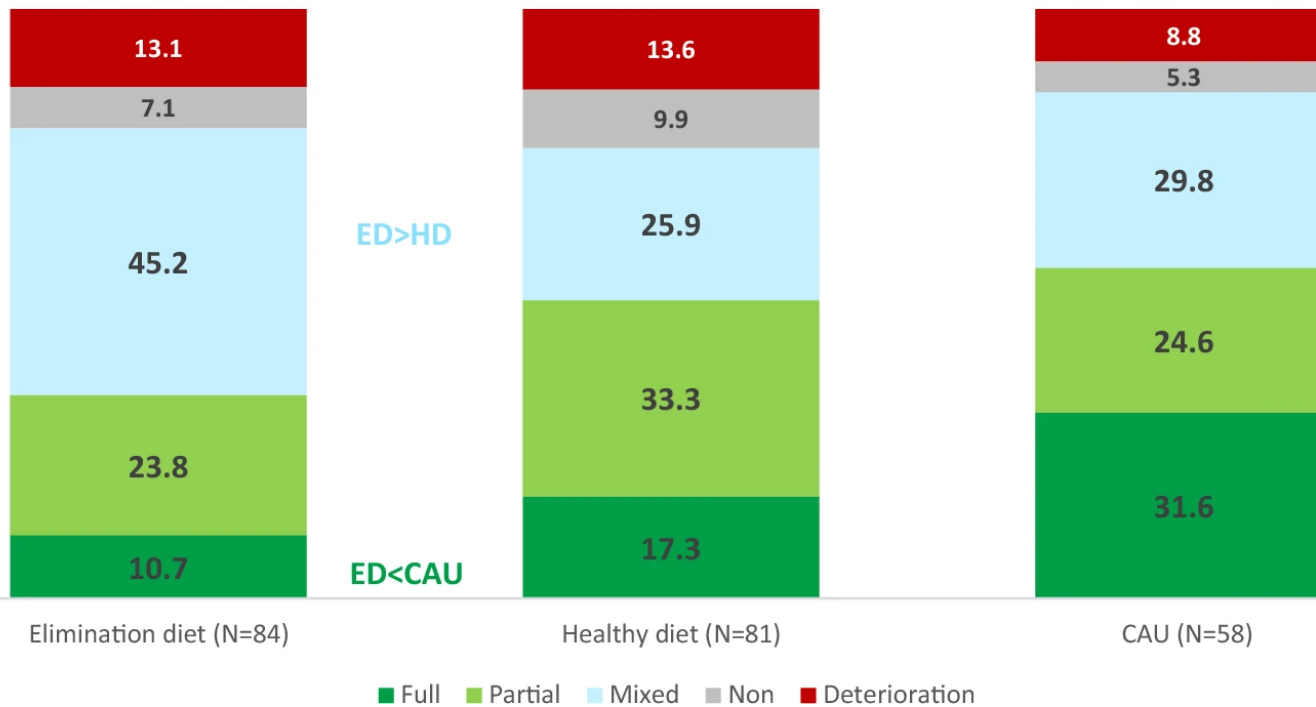
[1] Nigg et al. (2012); [2] Izquierdo-Pulido et al. (2015)

Diet based on Dutch dietary guidelines of 2015 translated into recommended daily consumption of food groups:

1. some foods allowed in unlimited quantities and frequencies (e.g., vegetables)
2. others in restricted quantities and frequencies (e.g., chocolate sprinkles)
3. some in very restricted quantities and frequencies (e.g., soft drinks)
4. some foods not allowed (e.g., white bread)

Extreme ED doesn't seem necessary...just reduce UPF!

Respondership after 5 weeks treatment



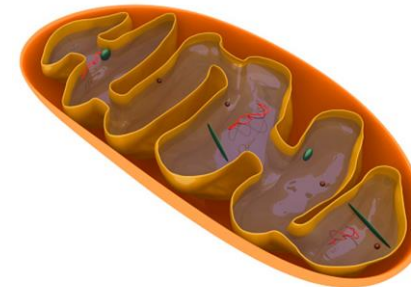
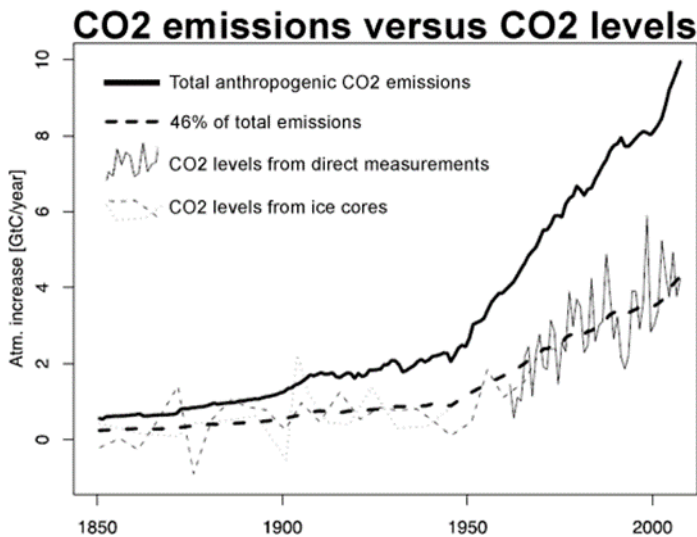
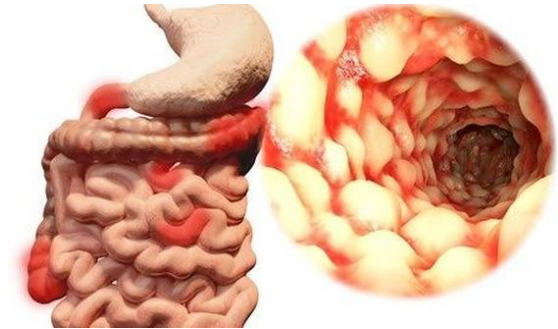
- Fewer ED (35%) than HD (51%) participants showed partial to full response
- 56% responders in CAU group
- Lack of superiority of ED versus HD suggests for majority of children, dietary treatment response is *not* rooted in food-allergies/-sensitivities
- Better health outcomes for those in diet interventions than CAU (BP, HR, sleep, gut)

The obvious solution?

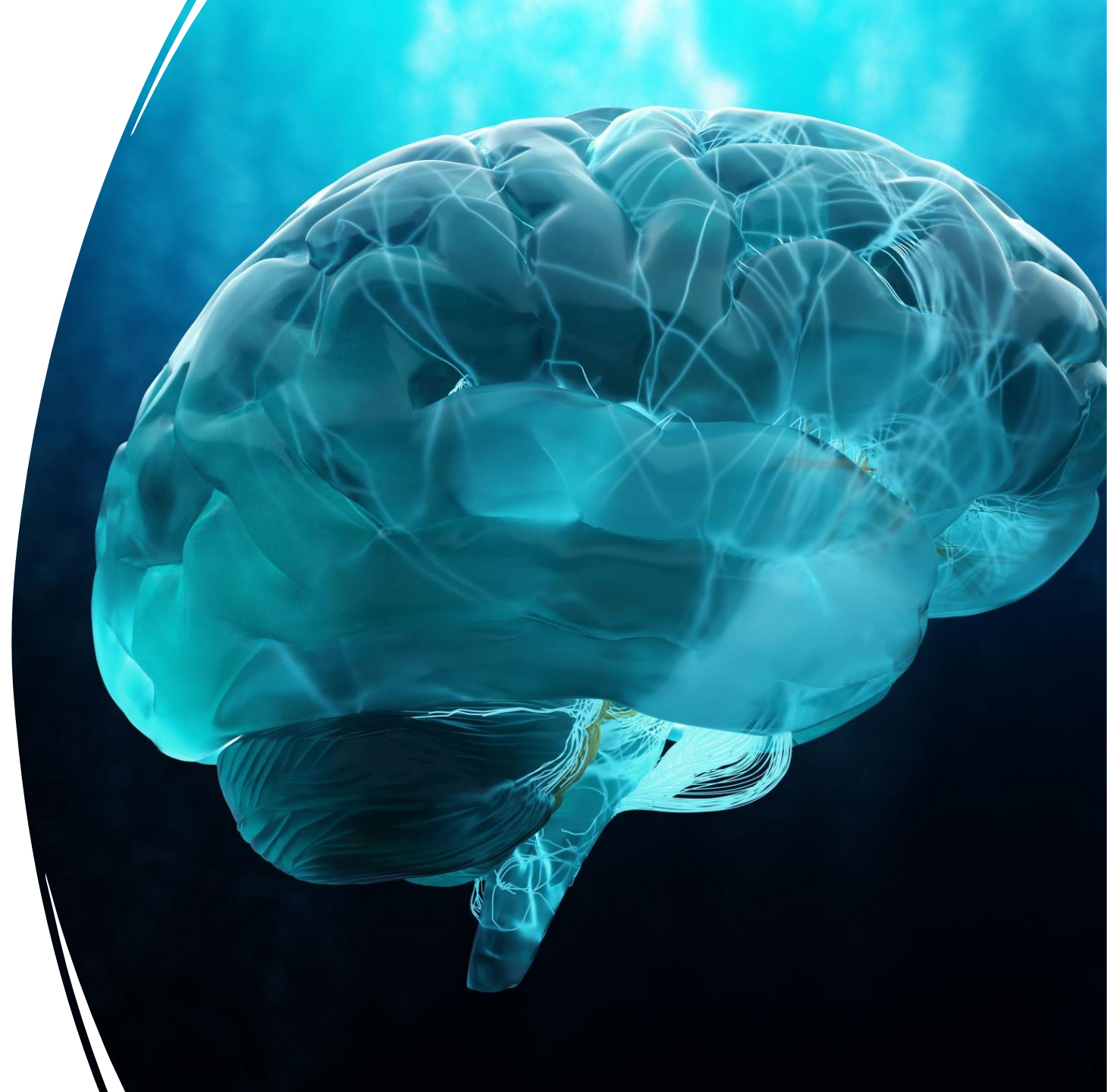


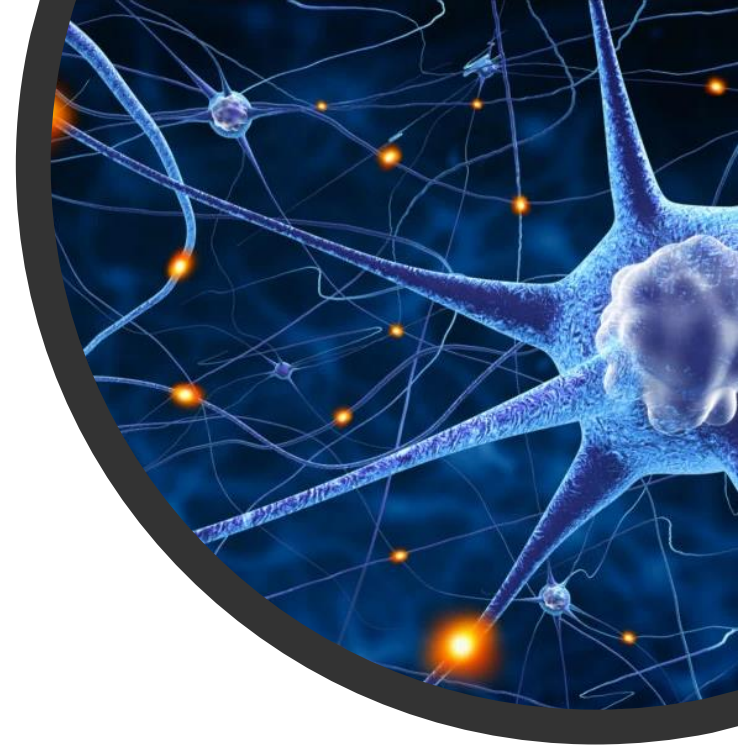
**Get our kids
to eat better!**

Eating better is a good thing.... BUT



All of these factors
could result in
fewer nutrients
available for brain
health



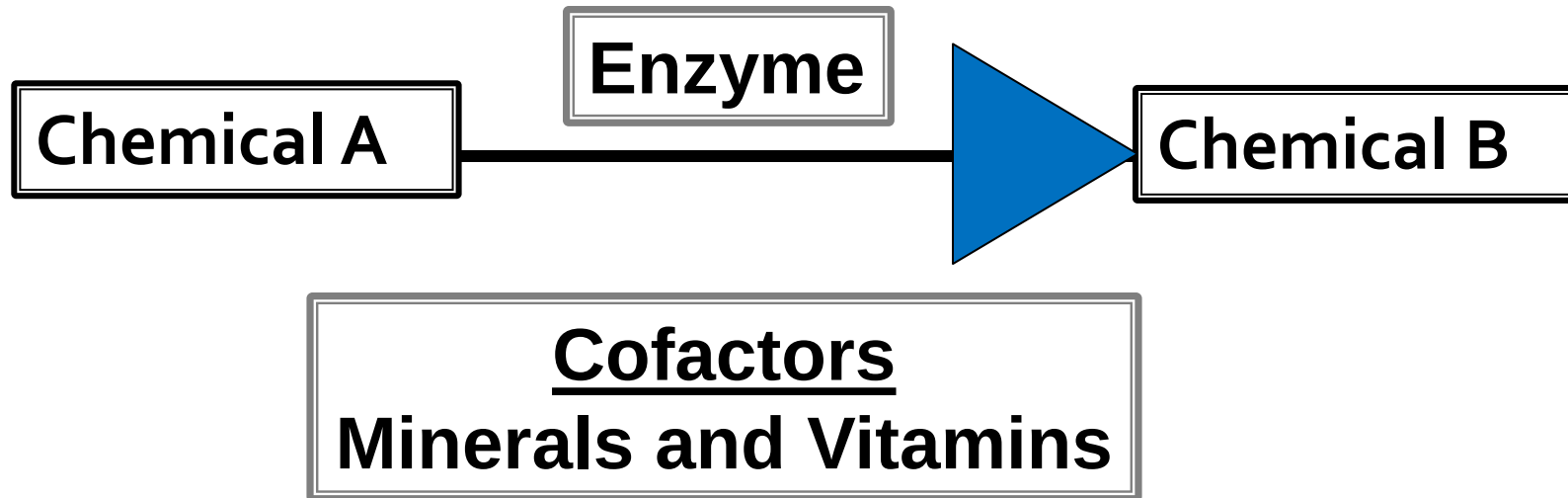


Micronutrients: Why do we need them for our brain?



BRAIN METABOLISM.....

the transformation of one compound to another



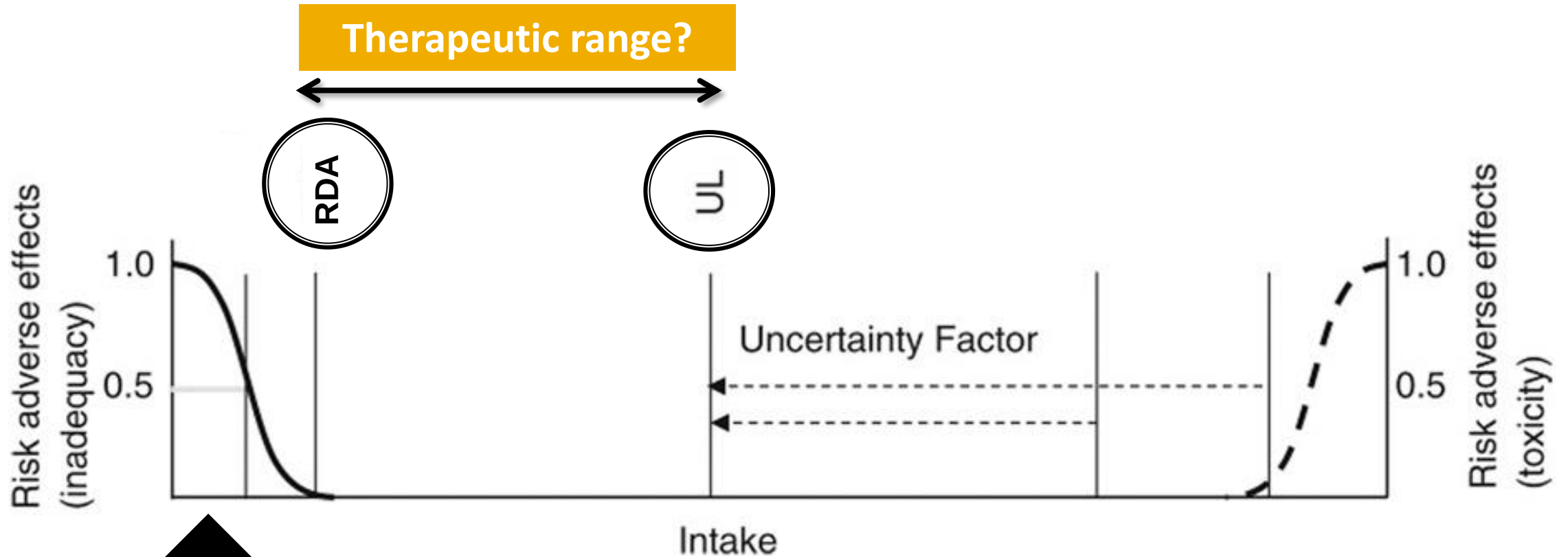
What's the evidence for broad spectrum micronutrients?



Image credit: iStock Getty Images

Classification: In-Confidence

How much?



Typical one-a-day ~ 25% RDA

Pike V, Zlotkin S. Excess micronutrient intake: defining toxic effects and upper limits in vulnerable populations. *Ann N Y Acad Sci* 2019;**1446**(1):21-43.

The Treatment we have been researching

In divided doses, generally participants took:

- 1 capsule, 3x day for 3 days
- 2 capsules, 3x day for 3 days
- 3 capsules, 3x day for 3 days
- up to 12 capsules/day
 - for stress we use 4-8/day;
 - kids 8-12 /day

<http://research4kids.ucalgary.ca/pillswallowing>

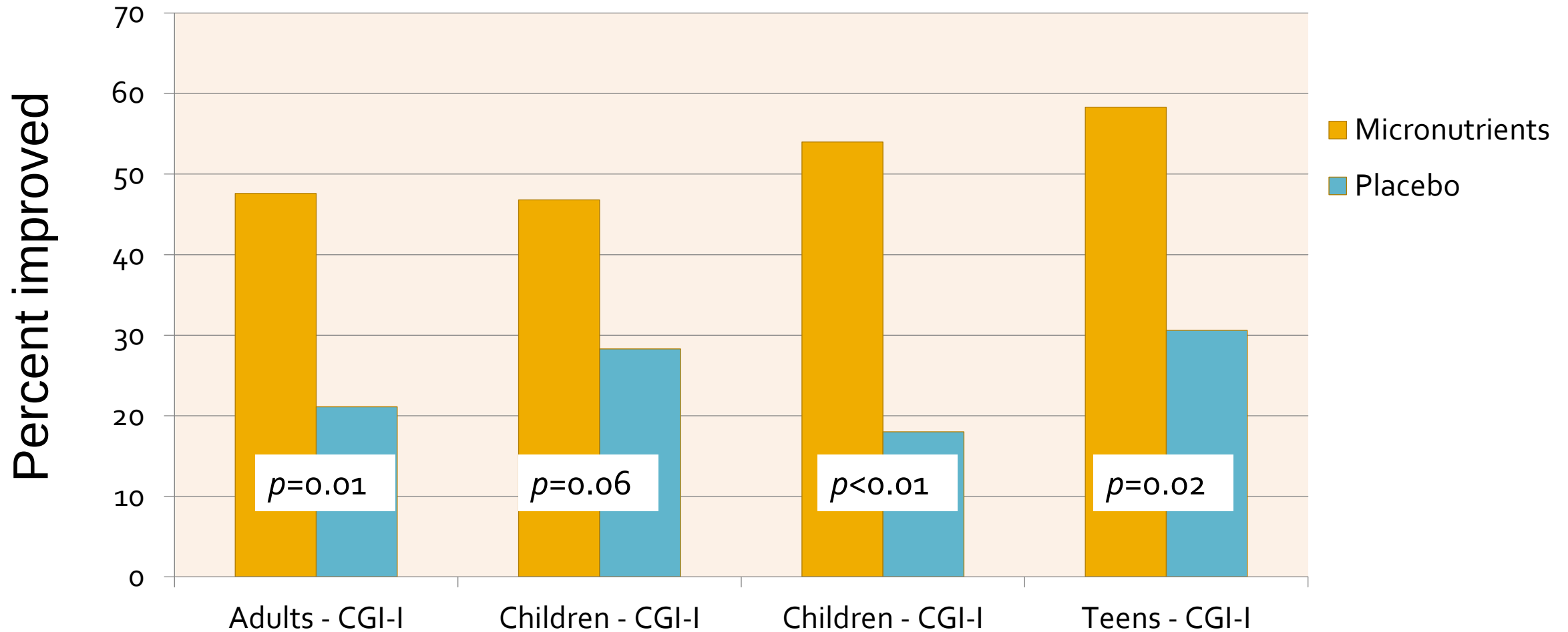
for a training video



Supplement Facts		
Serving Size: 4 Veggie Capsules		
Servings Per Container: 90		
Amount Per Serving		%DV
Vitamin A (as retinyl palmitate)	576 mcg	64%
Vitamin C (as ascorbic acid, sodium ascorbate & ascorbyl palmitate)	200 mg	222%
Vitamin D (as cholecalciferol)	24 mcg	120%
Vitamin E (as D-alpha tocopheryl succinate & mixed tocopherols)	64.8 mg	432%
Vitamin K (as phyloquinone & menaquinone-7)	40 mcg	33%
Thiamin (as thiamine HCl)	20 mg	1667%
Riboflavin	6 mg	462%
Niacin (as niacinamide & nicotinic acid)	48 mg	300%
Vitamin B ₆ (as pyridoxal-5-phosphate & pyridoxine HCl)	20 mg	1176%
Folate (as calcium folinate & L-5 methyltetrahydrofolate calcium)	480 mcg DFE	120%
Vitamin B ₁₂ (as adenosyl-, hydroxo- & methyl-cobalamin)	300 mcg	12500%
Biotin	360 mcg	1200%
Pantothenic acid (as D-calcium pantothenate)	10 mg	200%
Choline (as bitartrate)	64 mg	12%
Calcium (as NutraTek™ chelation complex)	440 mg	34%
Iron (as NutraTek™ chelation complex)	4.6 mg	25%
Phosphorus (as NutraTek™ chelation complex)	280 mg	22%
Iodine (as NutraTek™ chelation complex)	68 mcg	45%
Magnesium (as NutraTek™ chelation complex)	200 mg	48%
Zinc (as NutraTek™ chelation complex)	16 mg	145%
Selenium (as NutraTek™ chelation complex)	68 mcg	124%
Copper (as NutraTek™ chelation complex)	2.4 mg	267%
Manganese (as NutraTek™ chelation complex)	3.2 mg	139%
Chromium (as NutraTek™ chelation complex)	208 mcg	594%
Molybdenum (as NutraTek™ chelation complex)	48 mcg	107%
Sodium (as sodium ascorbate)	10 mg	1%
Potassium (as NutraTek™ chelation complex)	80 mg	2%
Proprietary blend	354 mg	†
Alpha-lipoic acid, Great Salt Lake minerals, inositol, shilajit, acetyl-L-carnitine HCl, Atlantic kelp (laminaria digitata), grape seed extract, N-acetyl-L-cysteine, L-glutamine, L-methionine, mixed tocopherols, mixed tocotrienols (from palm fruit), ginkgo biloba leaf extract, trace minerals as NutraTek™ chelation complex: boron, vanadium, nickel.		
† Daily Value (%DV) not established.		
Other ingredients: Vegetarian capsule (hypromellose), microcrystalline cellulose.		

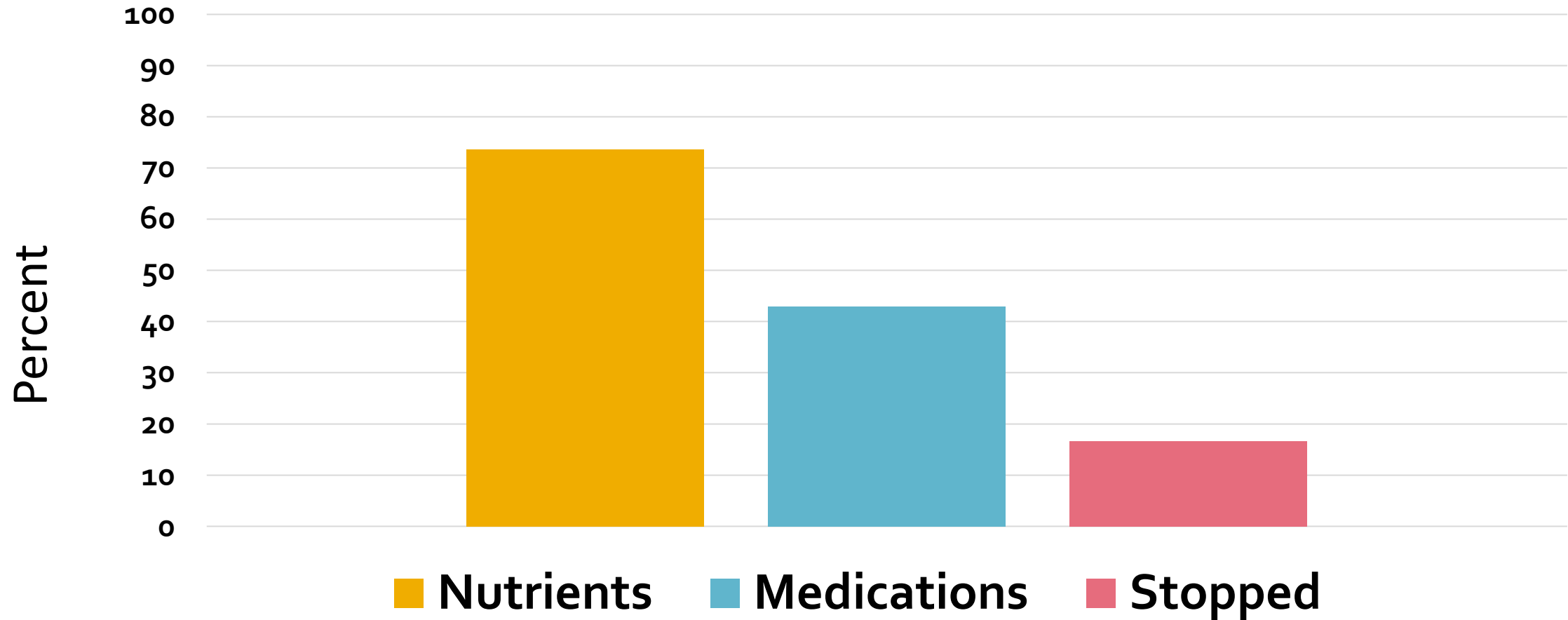
ADHD: Responders across 4 RCTs

Rucklidge et al., 2014, *BJP* (n=80); Rucklidge et al., 2018, *JCPP* (n=93); Johnstone et al., 2021, *JAACAP* (n=126); Rucklidge et al, under prep (n=72)

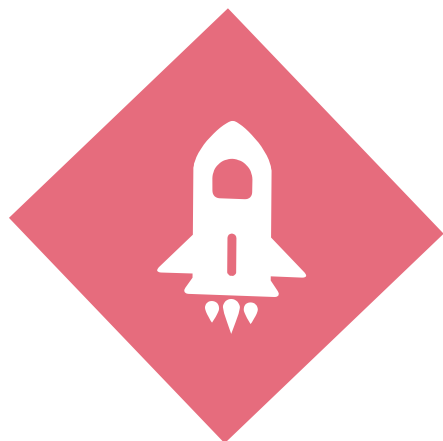


Long-term benefit of nutrients on ADHD: 1 yr follow up

Darling et al., 2019, *Journal of Child and Adolescent Psychopharmacology*



Height growth

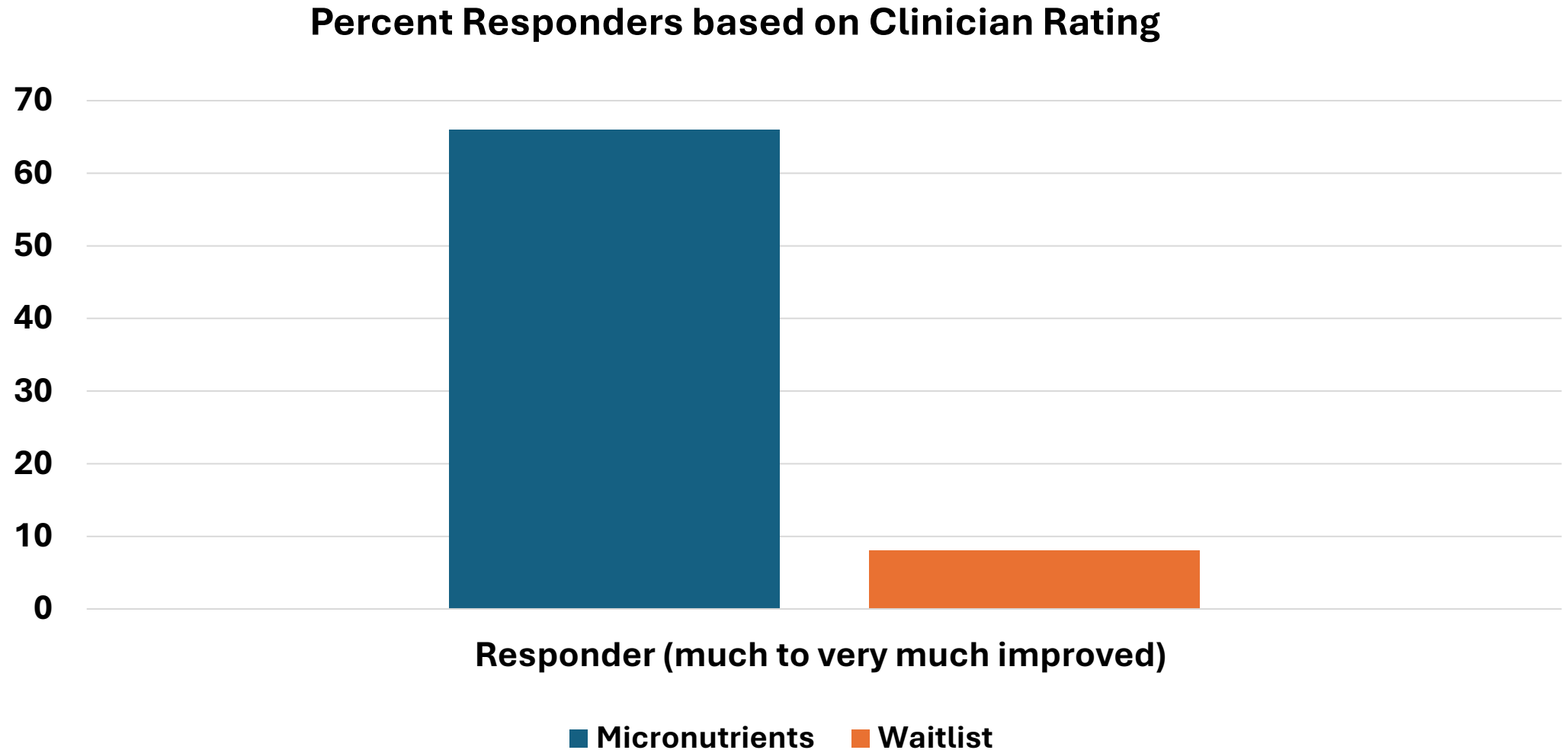


Children in the micronutrient group **grew 6mm** more than those in the placebo group in 8 weeks in the US study ($p=0.002$; $d=1.15$) and **3.6mm** more in the NZ study over 10 weeks ($p=0.06$; $d=0.40$)

Johnstone et al., 2021, JAACAP
Rucklidge et al., 2018, JCCP

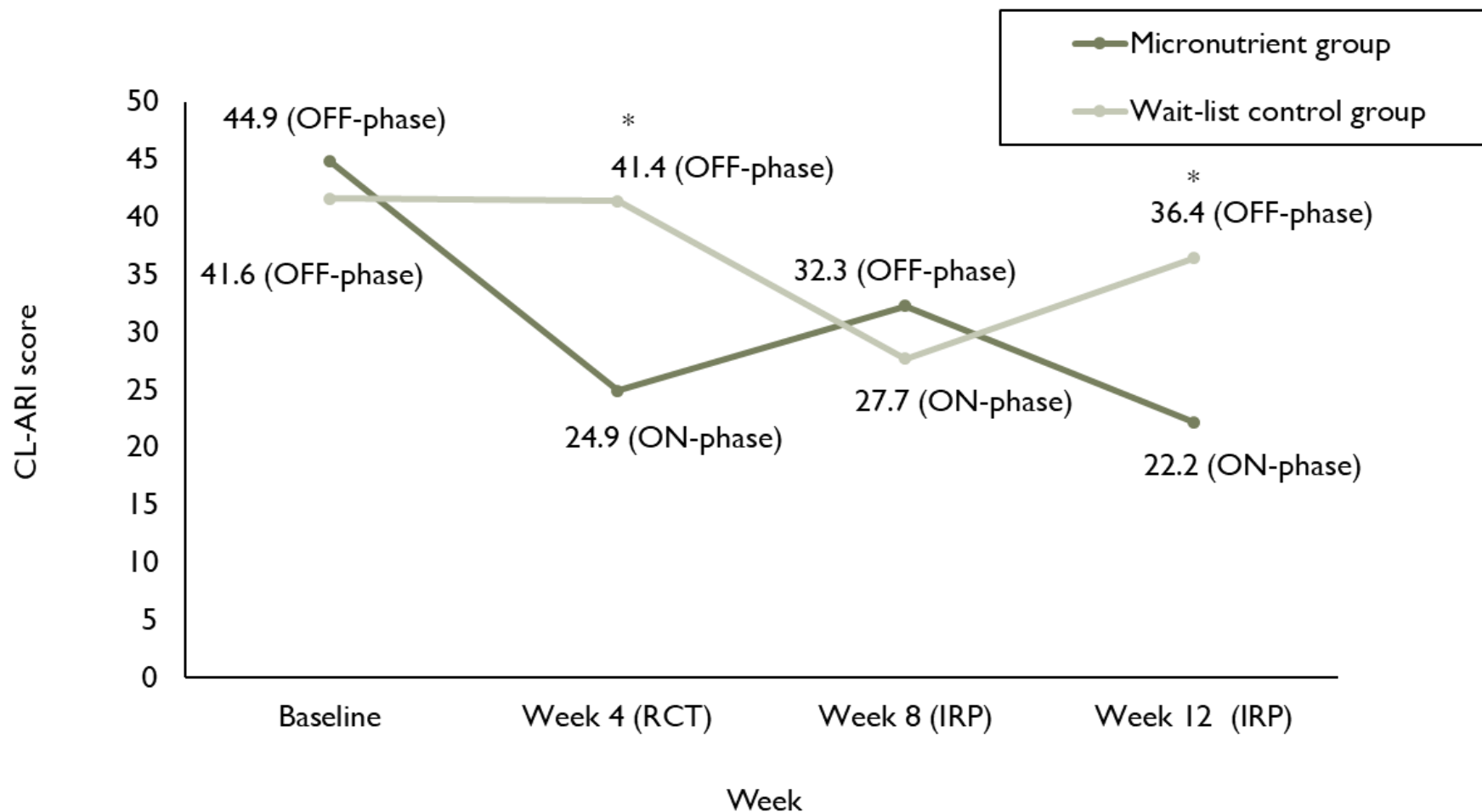
Micronutrients via oral mucosa 6-10 yr olds (n=48)

Katta et al., 2024, *PLOS One*



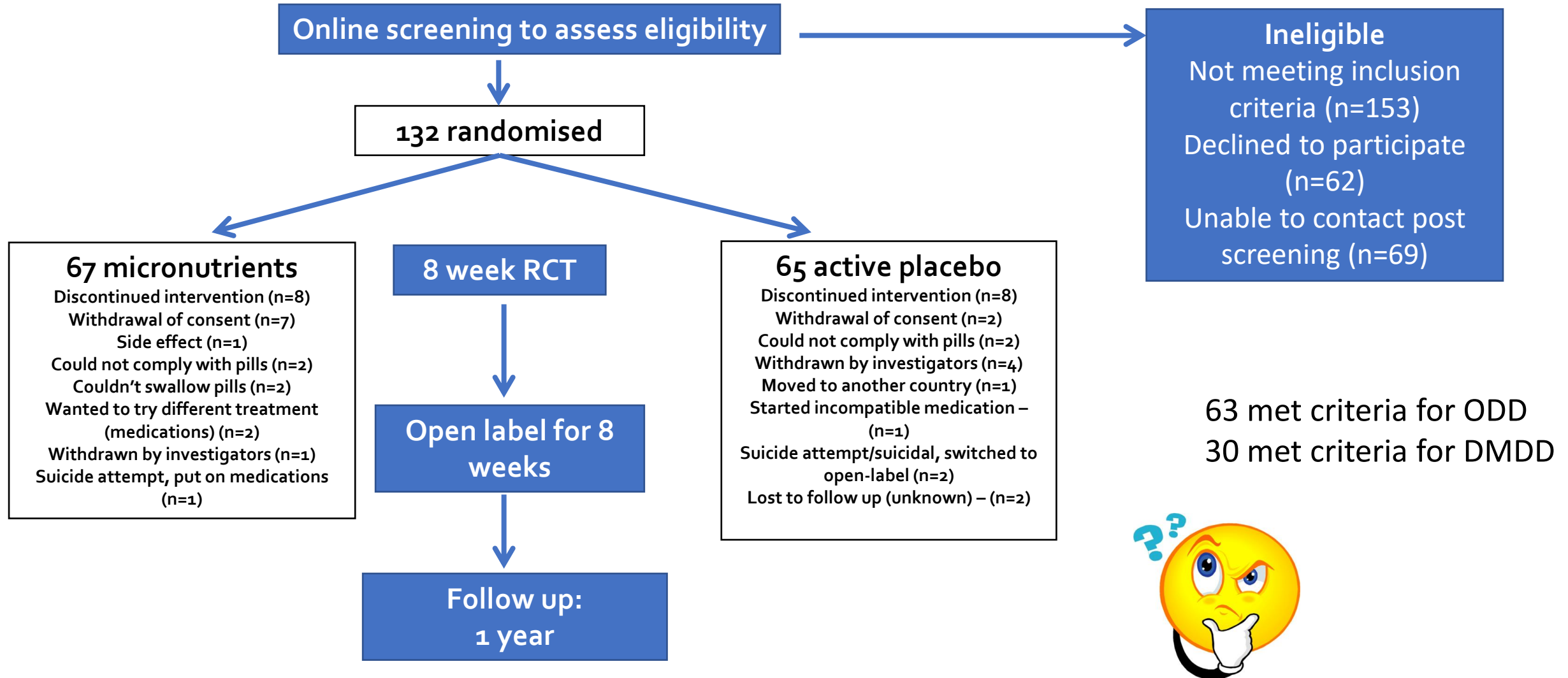
Micronutrients via oral mucosa 6-10 yr olds (n=48) for emotional dysregulation

Katta et al., 2024, *PLOS One*



Taiora Trial: Methodology

Rucklidge et al., under prep



Side Effects of micronutrients

- **Some nausea and/or gastro issues in first few weeks of taking nutrients**
 - **21% in micronutrient, 6% in placebo ($\chi^2(1)=2.267$, $p=0.02$, $RR=3.40$ 95%CI=1.18-9.78)**
 - **Typically resolved with taking pills with food and water**
- **Absence** of increased suicidal ideation, sedation, fatigue, carbohydrate or lipid problems, weight changes, sexual side effects, seizures, blood pressure or heart rate changes, motor side effects, tremor, liver or thyroid changes, and blurred vision
- **Improved** quality of life, regulation of emotions, resilience, mood
- *Combining with psych meds needs supervision with prescriber*

- Villagomez et al., 2023, *Frontiers Child Adol Psychiatry*; Popper, 2014, *Child and Adolescent Psychiatric Clinics*; Rucklidge et al., 2020, *JACM*; Rucklidge et al., 2024, *JCPP*

Practical recommendations

1. Follow traditional dietary pattern: best data for *Mediterranean*
2. Increase consumption of fruit and veg, legumes, whole grains, nuts, seeds
 1. Aim for 30 different plants per week
3. Include a high consumption of omega 3s (fish, grass fed meat, nuts, seeds)
4. Replace *ultra*-processed with whole food
5. Limit intake of *ultra*-processed foods, fast foods, commercial baked goods, and sweets
6. If trying supplements, stick to the data and published research
 - Email mentalhealthnutrition@canterbury.ac.nz for information on research supplements

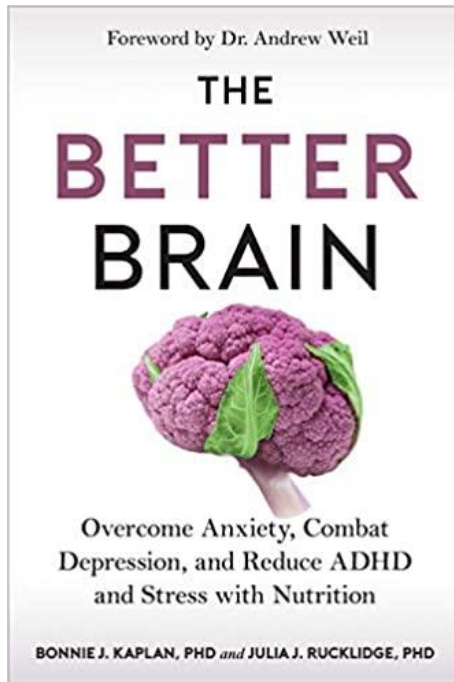


Supplementation is
simply *proof of
principle*:

**Food environment
mismatch with brain's
needs**

Three practical resources

- MOOC!
- <https://www.edx.org/course/mental-health-and-nutrition>
- Free!
- UC online Professional development





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