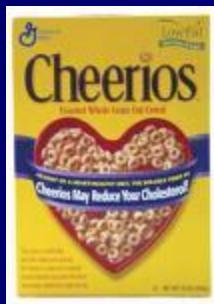


The influence of high vs. low-sugar cereal on children's breakfast consumption



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Key Questions:

- Will children eat low-sugar cereals?
- Does consumption of high vs. low-sugar cereals differ?
- Do children compensate for the lack of sugar in low-sugar cereals?
- Does the amount of sugar in cereal influence consumption of other foods at breakfast?

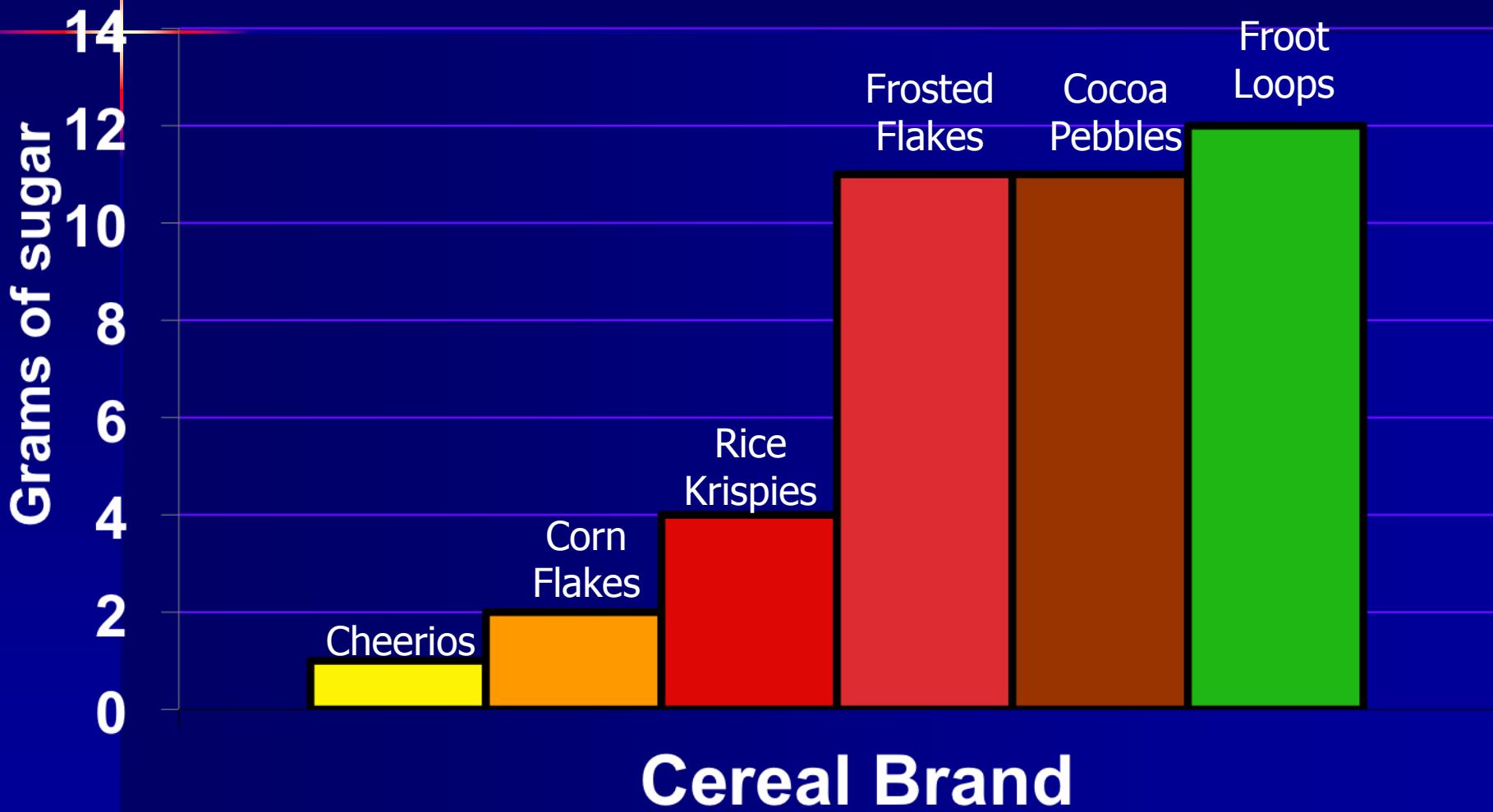
Subjects

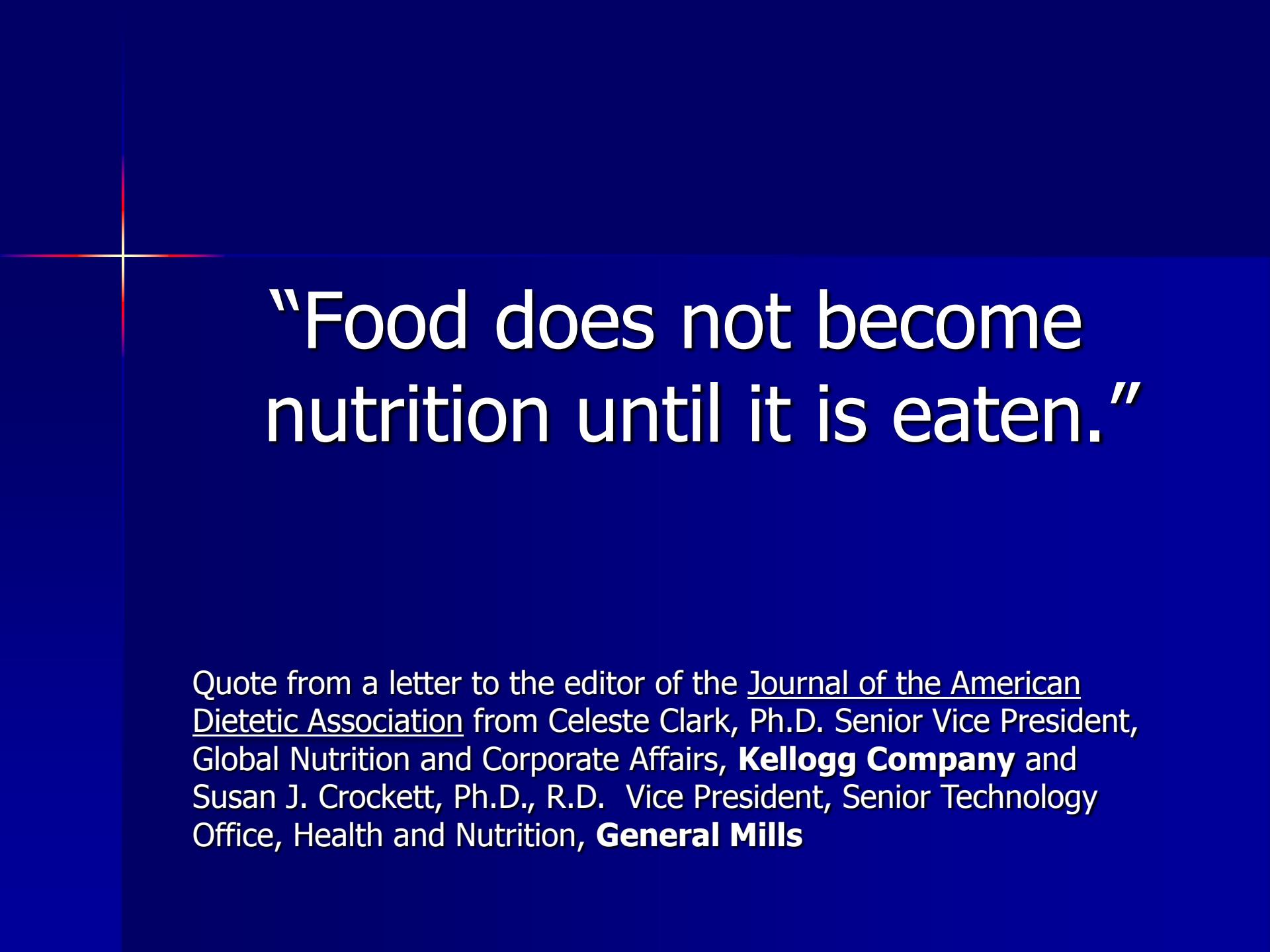
- N = 89
- Ages 5 – 12
- Race
 - White 4%
 - Black 27%
 - Hispanic 33%
 - Mixed 16%
 - Other 19%
- Do you have ___ in your bedroom?
 - Television 73%
 - VCR/DVD 38%
 - Computer 36%
 - Video Game Player 61%

Method

- Breakfast served during summer camp
- Between subject design
- Children given a box of high-sugar OR low-sugar cereal, cartons of milk and orange juice, bowls of strawberries and bananas, and packets of sugar
- Allowed to take as much as they like of everything

Sugar grams per serving





“Food does not become nutrition until it is eaten.”

Quote from a letter to the editor of the Journal of the American Dietetic Association from Celeste Clark, Ph.D. Senior Vice President, Global Nutrition and Corporate Affairs, **Kellogg Company** and Susan J. Crockett, Ph.D., R.D. Vice President, Senior Technology Office, Health and Nutrition, **General Mills**

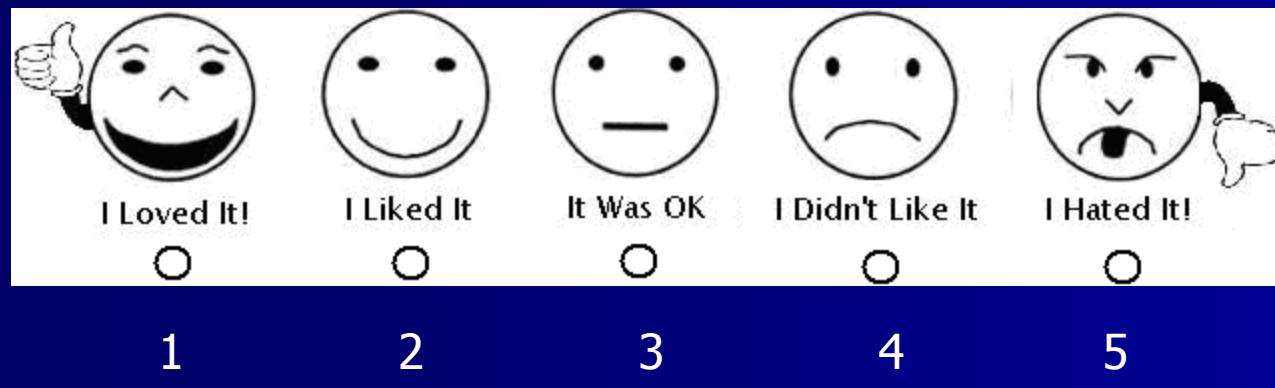
Will children eat low-sugar cereals?

- Percent of children who ate the cereal they were served
 - High-sugar 99%
 - Low-sugar 100%

“Children like the taste of ready-to-eat cereals and are therefore more likely to eat breakfast.”

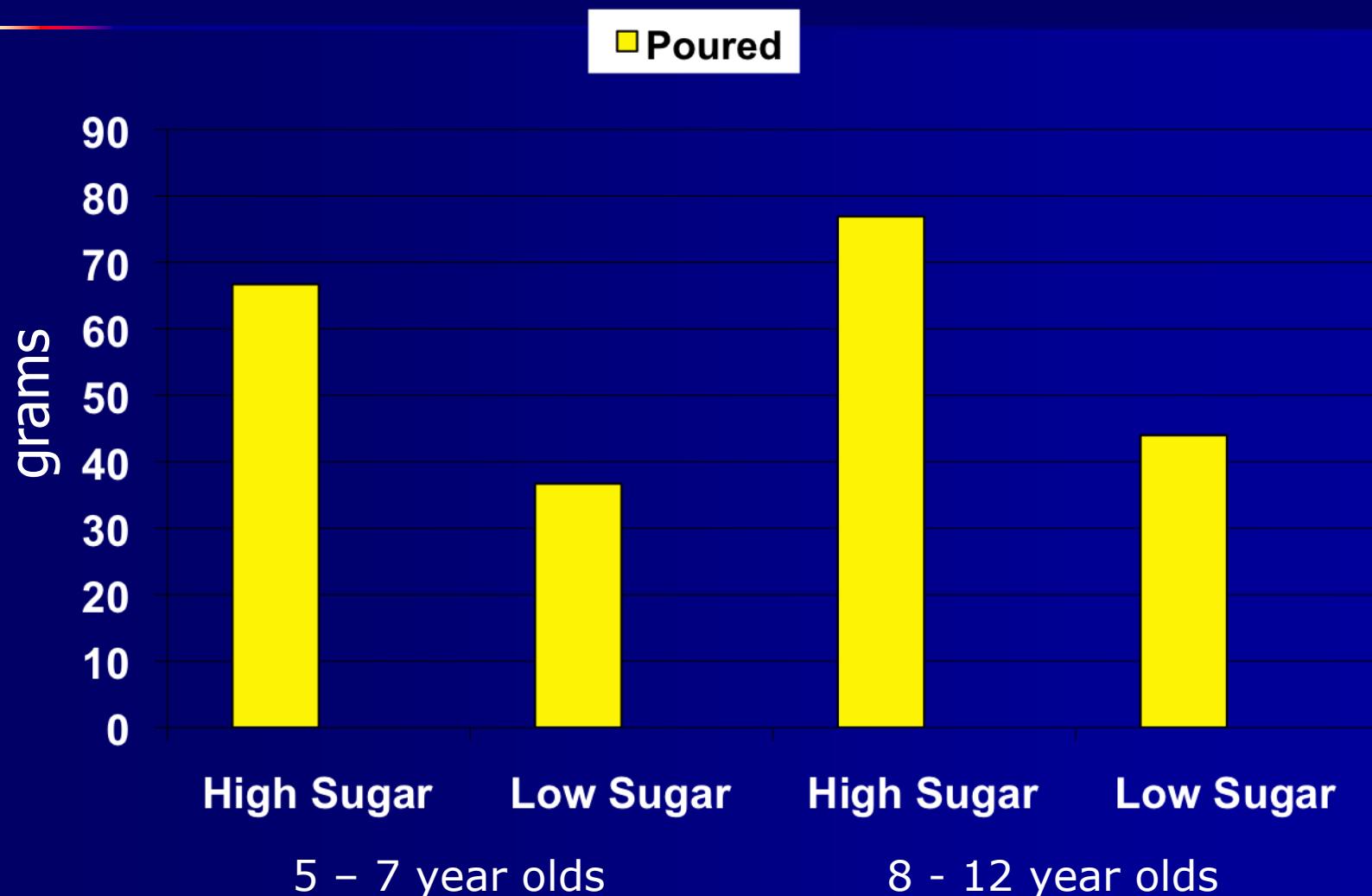
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Children's ratings of the taste of the cereal served

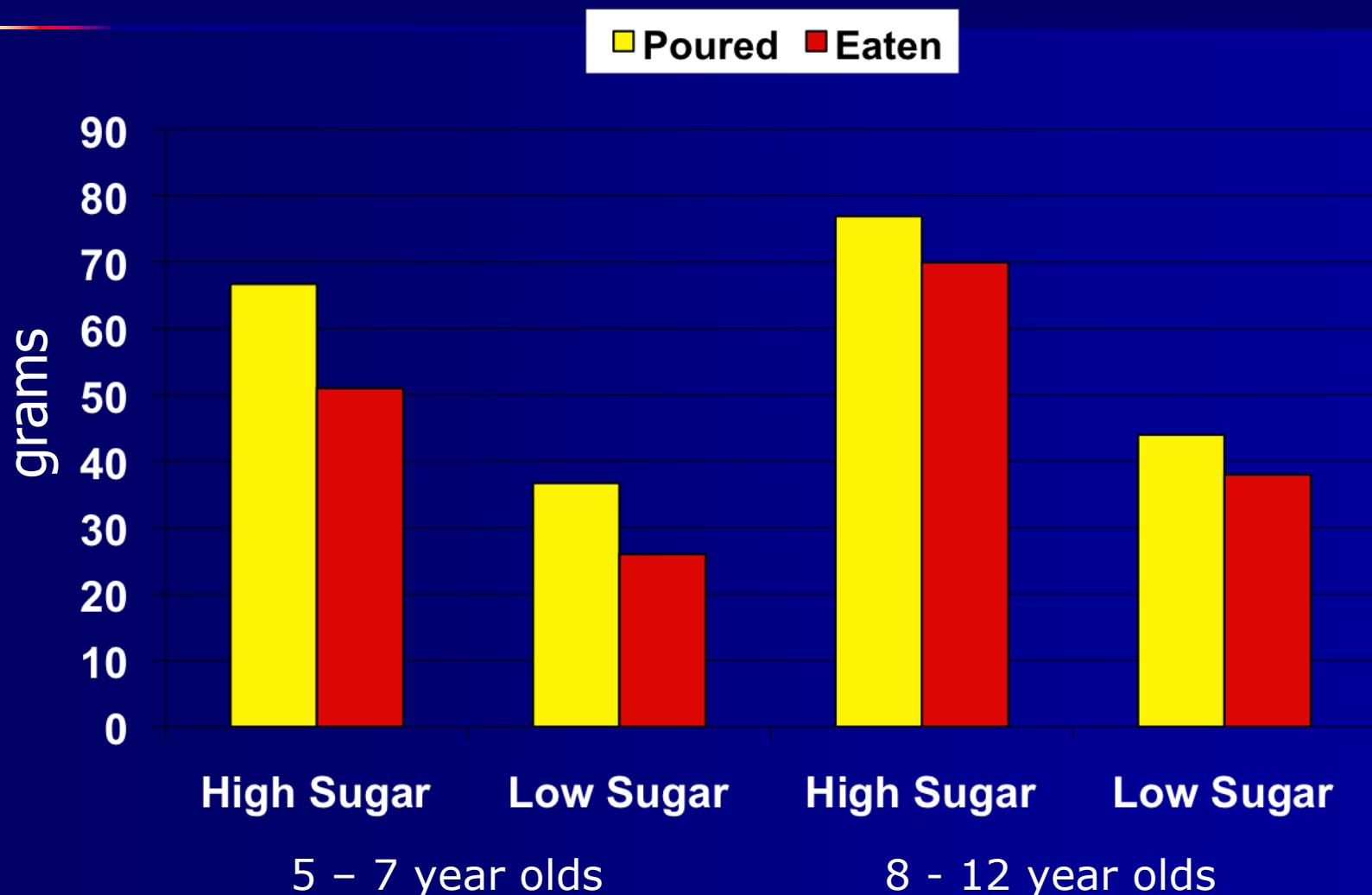


High-sugar cereal average: 1.5
Low-sugar cereal average: 1.6 }
No significant difference

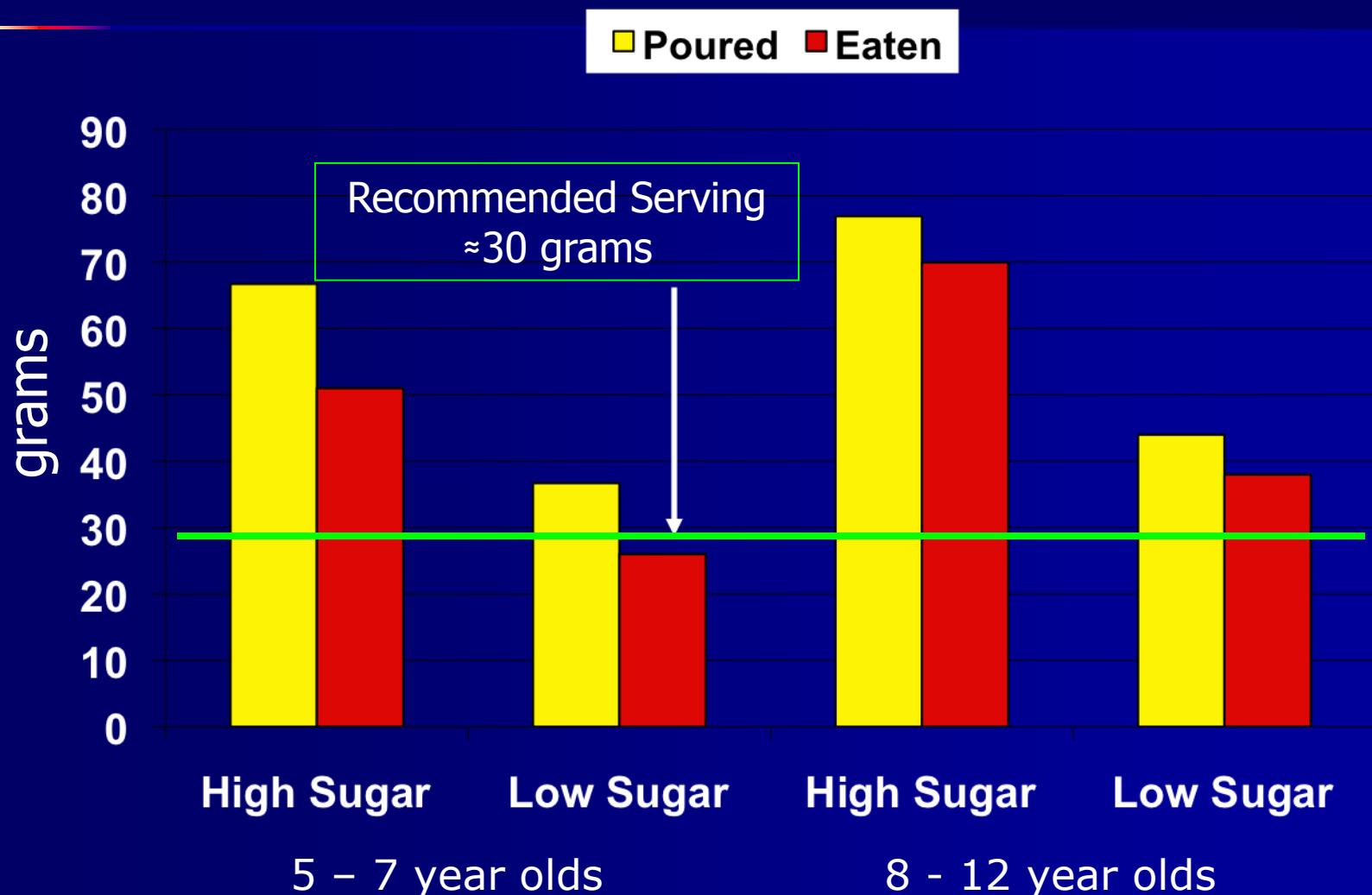
Amount of cereal poured



Amount of cereal poured and eaten



Amount of cereal poured and eaten

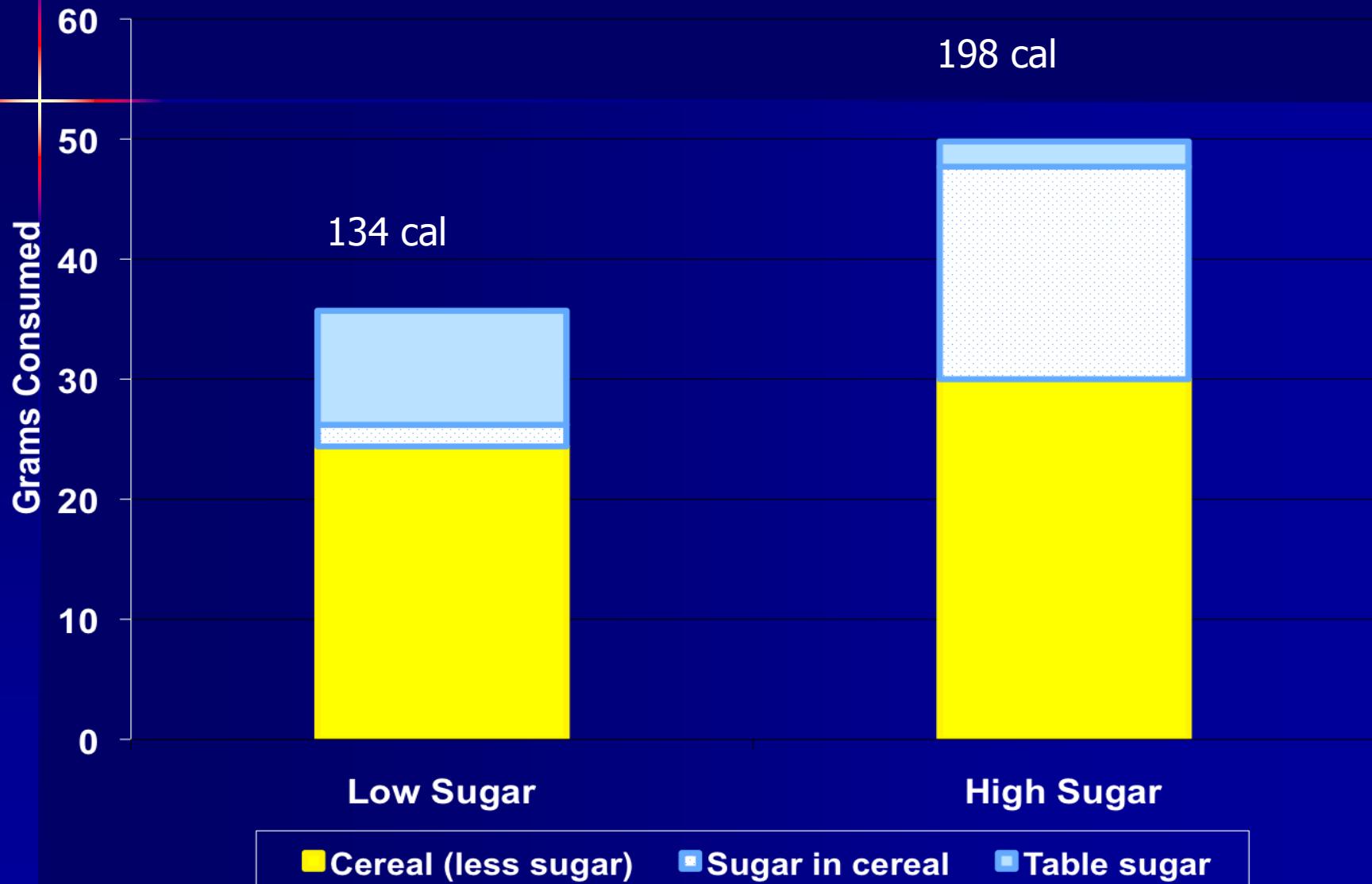


Children overeat high-sugar cereals

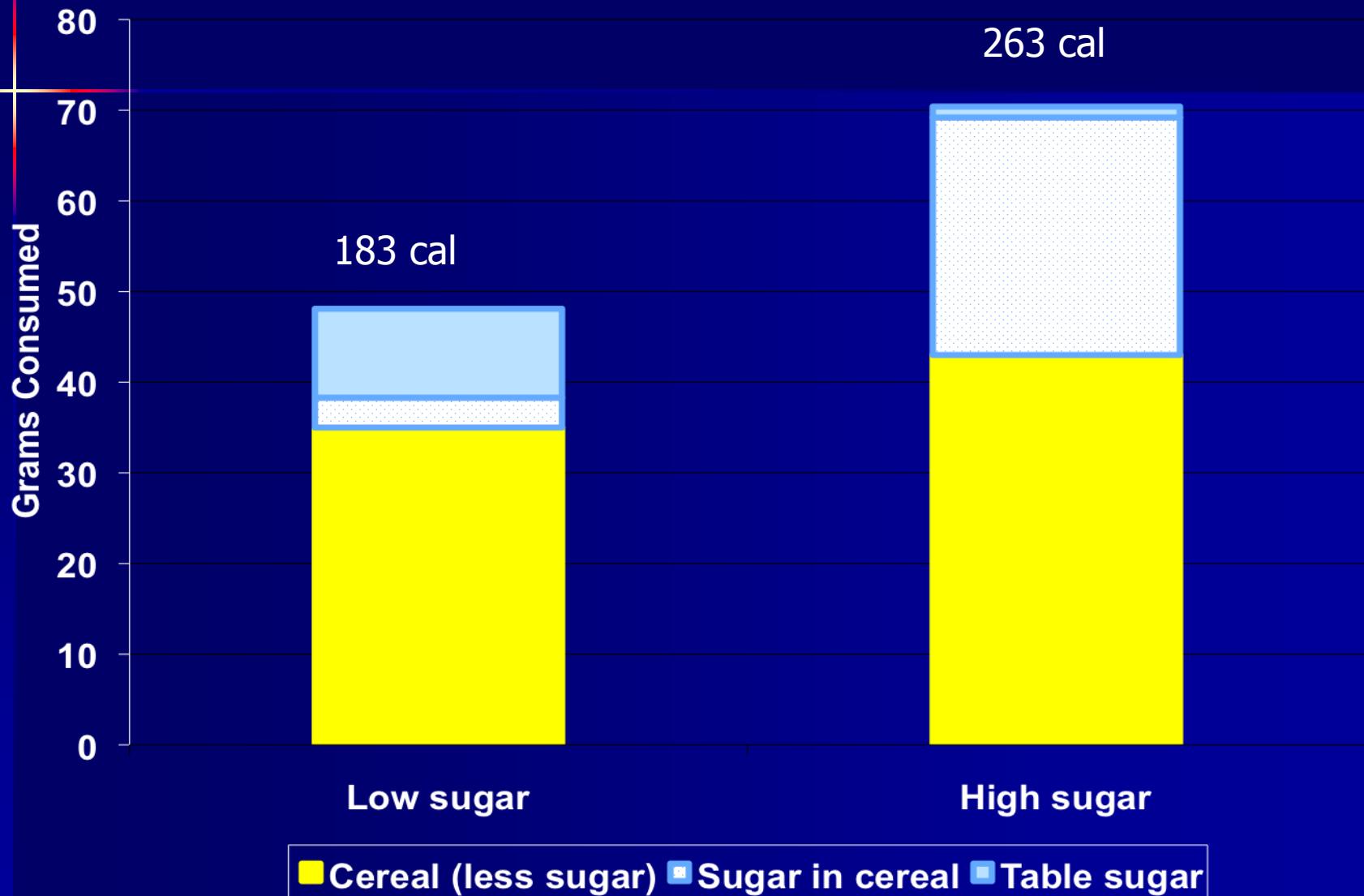
- Children like the taste of low-sugar cereals and eat the recommended serving (average = 32.4 grams)
- Children like the taste of high-sugar cereal and eat twice the recommended serving (average = 60.7 grams)

“Children will add more sugar to low-sugar cereal than is found in high-sugar cereal”

Ages 5 – 7 years

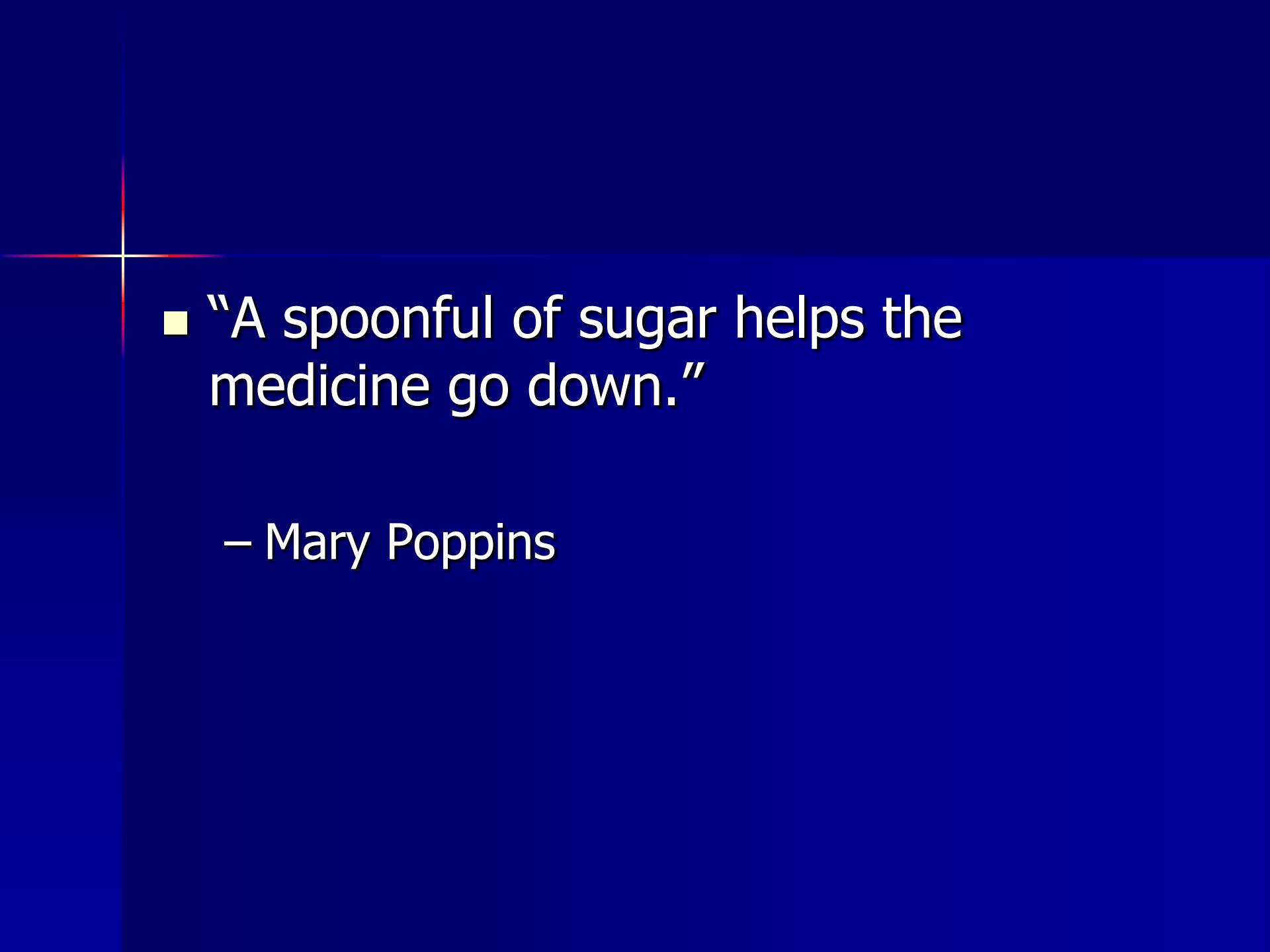


Ages 8 – 12 years



Do children compensate?

- Children added significantly more table sugar to low-sugar cereals than high-sugar cereals
- Despite this, children ended up eating approximately half as much total sugar in the low-sugar cereal condition



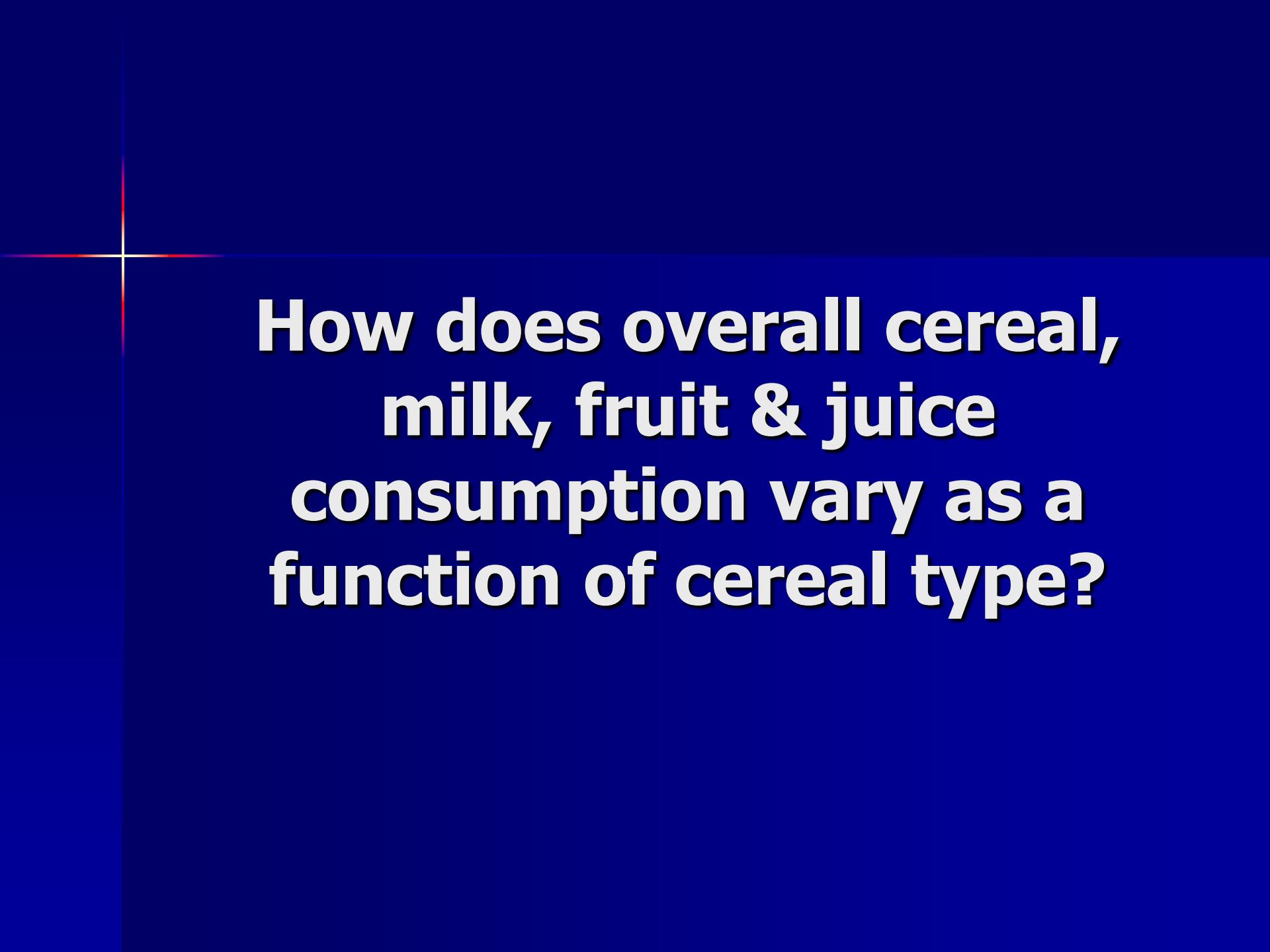
■ “A spoonful of sugar helps the medicine go down.”

– Mary Poppins

Age	Recommended sugar limit*	Sugar consumed from high-sugar cereals	% of discretionary added sugar for high-sugar cereals
Sedentary Children			
4 – 8	16 g	19 g	118%
9 – 13	12-20 g	26 g	216% - 130%
Active Children**			
4 – 8	20-32 g	19 g	95%-59%
9 – 13	36-56 g	26 g	72%-46%

* Johnson et al. (2009) Dietary sugars intake and cardiovascular health: A scientific statement from the American Heart Association. [Circulation](#).

** 60 minutes a day moderate to vigorous activity

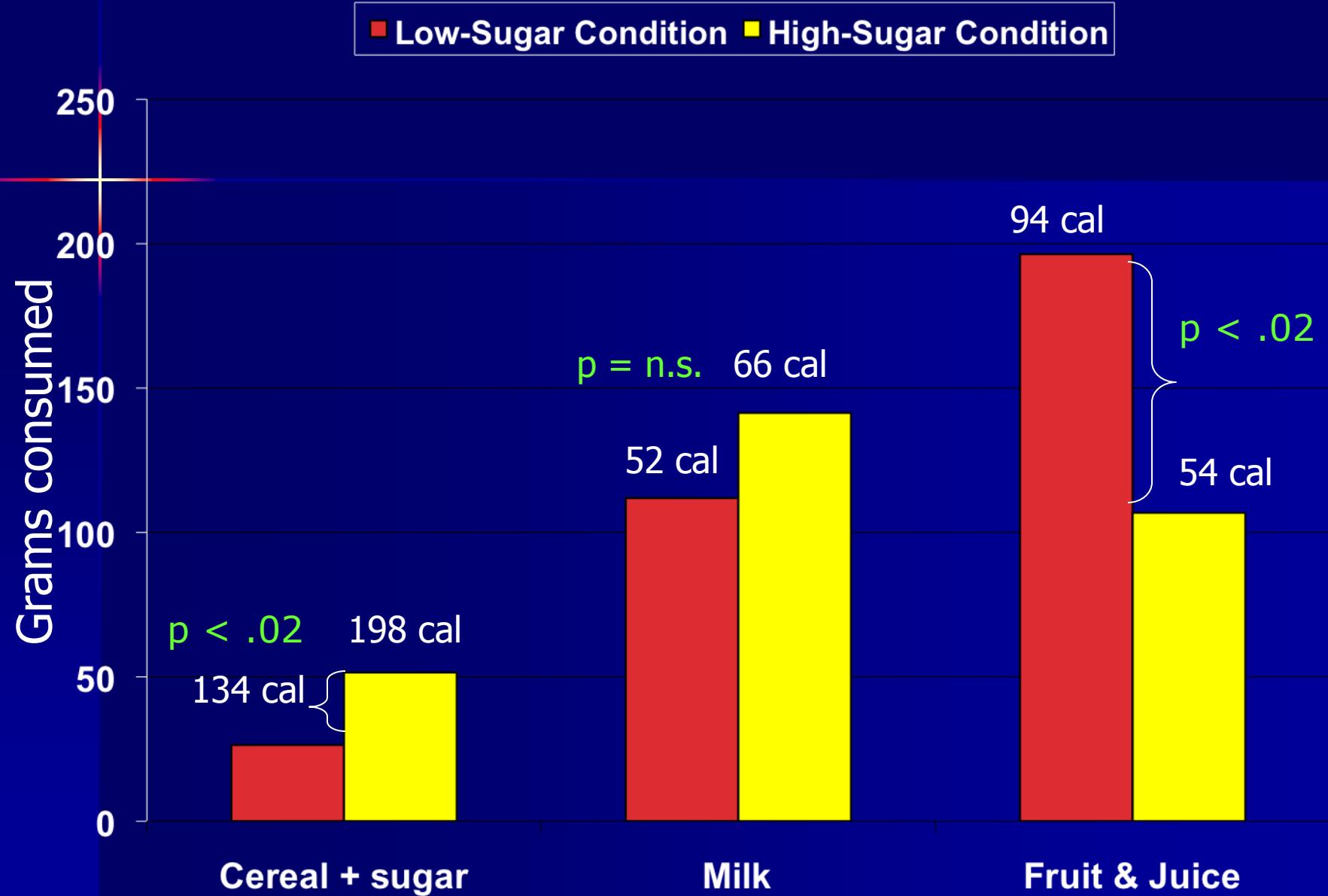


**How does overall cereal,
milk, fruit & juice
consumption vary as a
function of cereal type?**

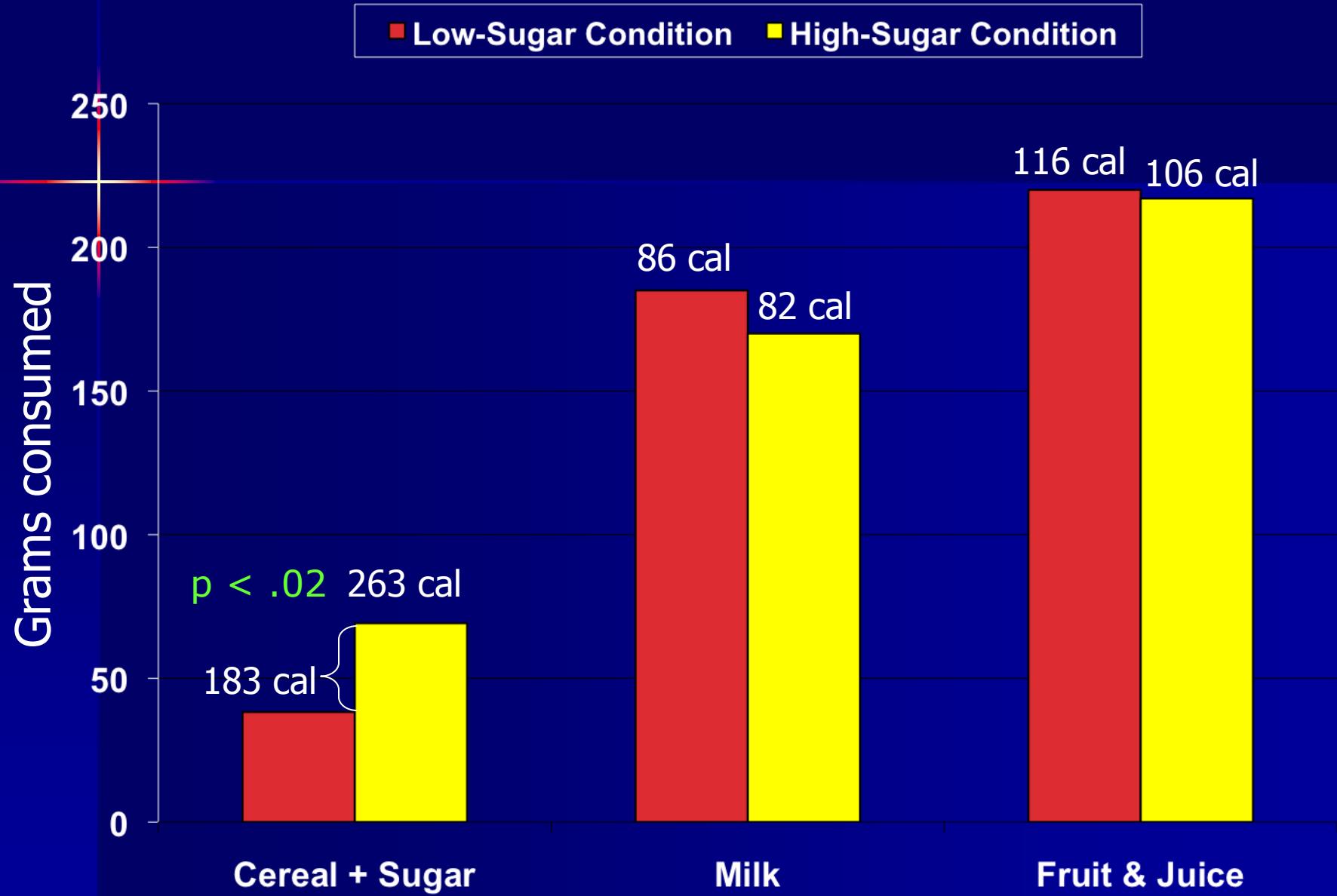
Adding fruit to cereal bowl

- Children in the low-sugar condition were significantly more likely to put fruit (bananas & strawberries) on top of their cereal
- Children who put fruit on top of their cereal were significantly more likely to eat it than children who did not

Ages 5 - 7 years



Ages 8 - 12 years



Conclusions

- When low-sugar cereals are served, children eat the recommended serving size
- In contrast, when high-sugar cereals are served, children eat twice the recommended serving size

Conclusions

- If table sugar is provided, children will add it to low-sugar cereals
- But they do not add nearly as much sugar as the industry does to high-sugar cereals

Conclusions

- For many children, high-sugar cereals “spend” all of their added-sugar discretionary calories – at breakfast
- Overall breakfast nutrition is better when eating low-sugar cereals due to lower sugar consumption and higher fruit and juice consumption

Acknowledgements

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