

Suiker en gezondheid; HAS, 26 mei 2016



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Hungry Planet – Peter Menzel



Voedselkeuze wordt bepaald door aanbod





Wat is suiker ?

- Glucose,
- Sucrose
- Maltose
- Maissiroop
- Honing
- Gehydrolyseerd zetmeel
- Invert suiker
- Fructose
- Molasse etc

Hoeveel suiker ?

- WHO: 10% (maar liefst 5%) van energie uit 'vrije suikers'
- Dat is ongeveer 30 gram per dag (incl. vruchtensap)

Evolutie perzik in 3000 jaar



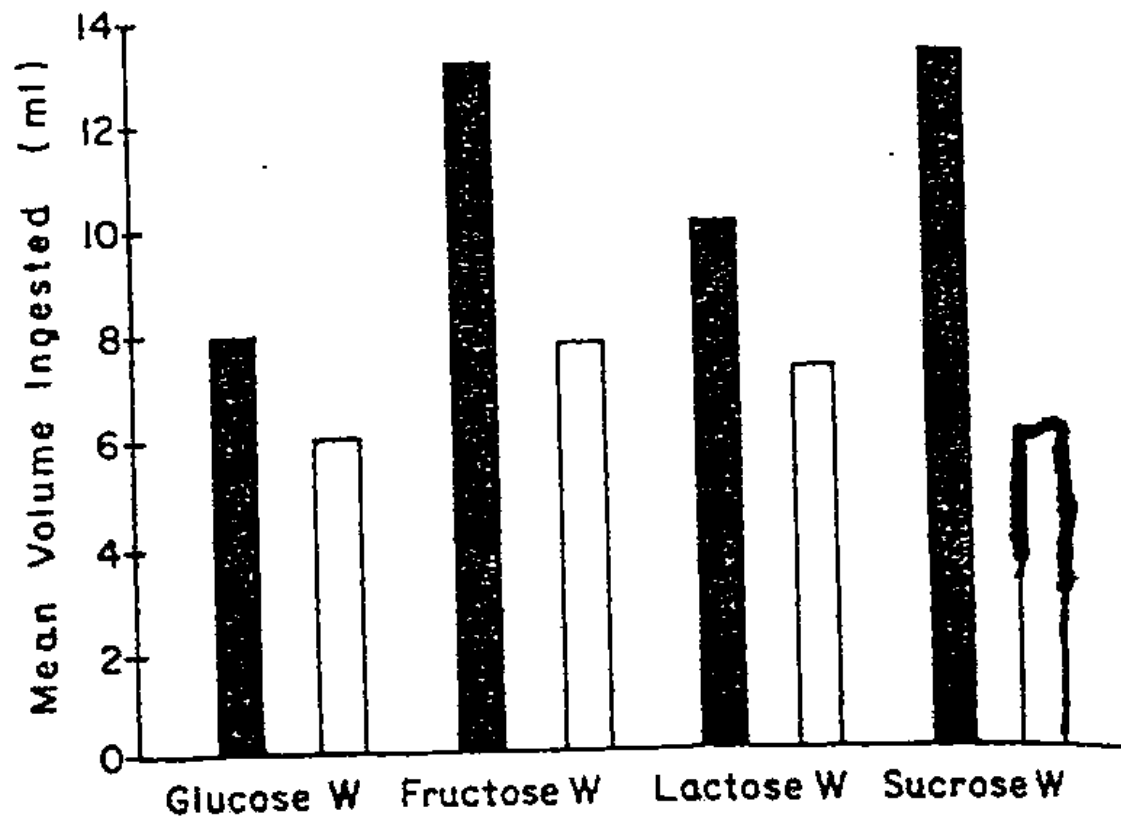


Figure 12-2. Mean volume of sugar solutions and water (W) ingested by infants offered solutions of different sugars. Copyright 1973 by the American Psychological Association. Reprinted⁴ by permission.

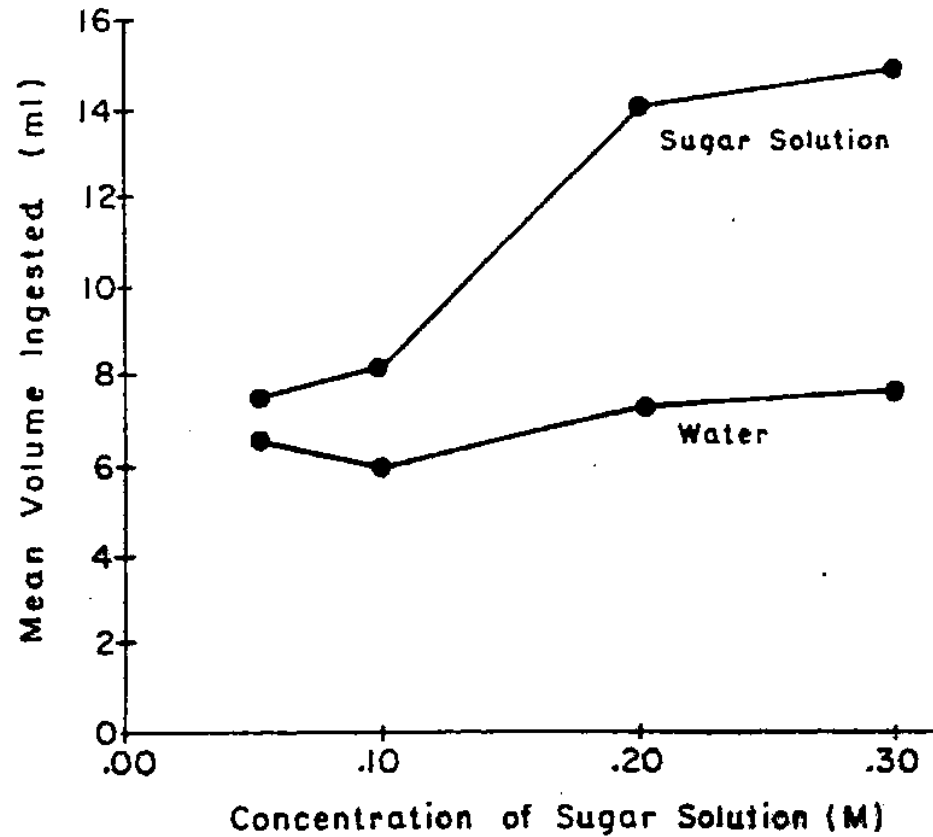


Figure 12-1. Mean volume of sugar solutions and water ingested by infants offered different concentrations of sugar solutions. Copyright 1973 by the American Psychological Association. Reprinted⁴ by permission.

Voorkeuren, nature vs./**and** nurture

- Voorkeuren voor smaken zijn redelijk stabiel en universeel; zoet, zout, zuur, bitter, umami, vet over de hele wereld
- Smaak signaleert macronutriënten → voeding
 - Zoet → koolhydraten
 - Umami → eiwit
 - Vet → vet
 - Zout → vochtbalans
 - Bitter en zuur → gevaarlijk



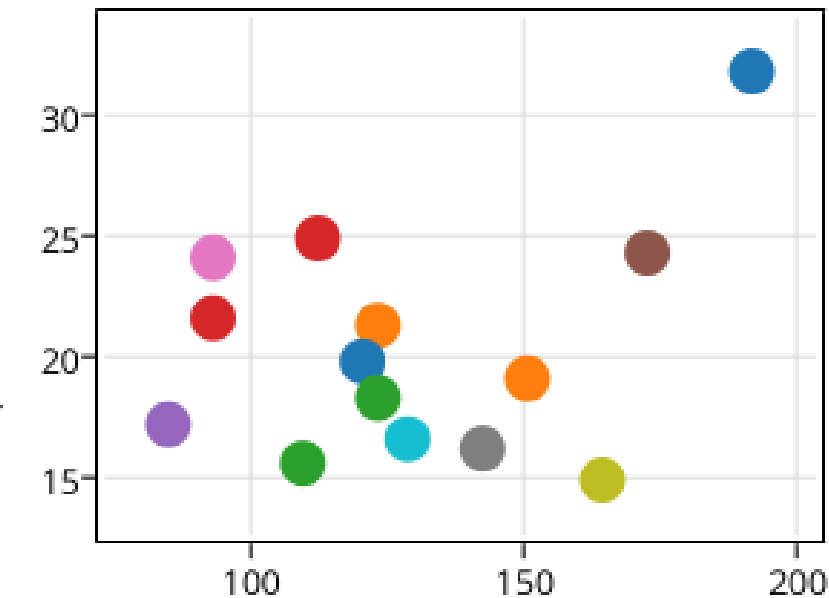
Hoe worden voorkeuren aangeleerd

- Vier principes
 - Blootstelling
 - Flavour – nutrient learning (Energie – smaak conditionering)
 - Flavour – flavour learning (Smaak – smaak conditionering)
 - Sociale beloning en straf / imitatie



Obesity Rate (% Population with BMI of 30 or higher)

US, Canada, EU Sugar Consumption to Obesity Rate Correlation



Sugar Consumption (grams per person per day)

- United States of America
- Germany
- France
- United Kingdom
- Italy
- Canada
- Spain
- Netherlands
- Switzerland
- Sweden
- Norway
- Belgium
- Austria
- Portugal

Soft drinks and fruit juices

Beverages

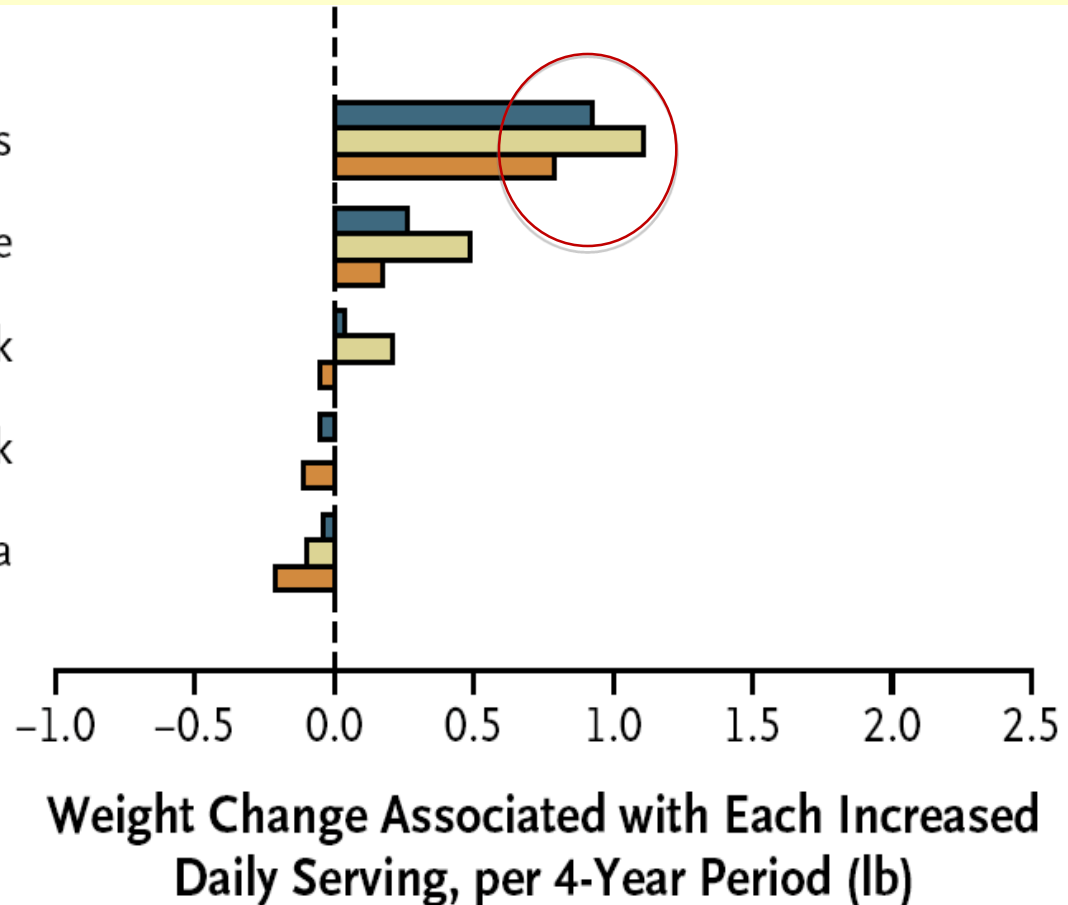
Sugar-sweetened beverages

100%-Fruit juice

Low-fat or skim milk

Whole milk

Diet (zero-calorie) soda



From: **Added Sugar Intake and Cardiovascular Diseases Mortality Among US Adults**

JAMA Intern Med. 2014;174(4):516-524. doi:10.1001/jamainternmed.2013.13563

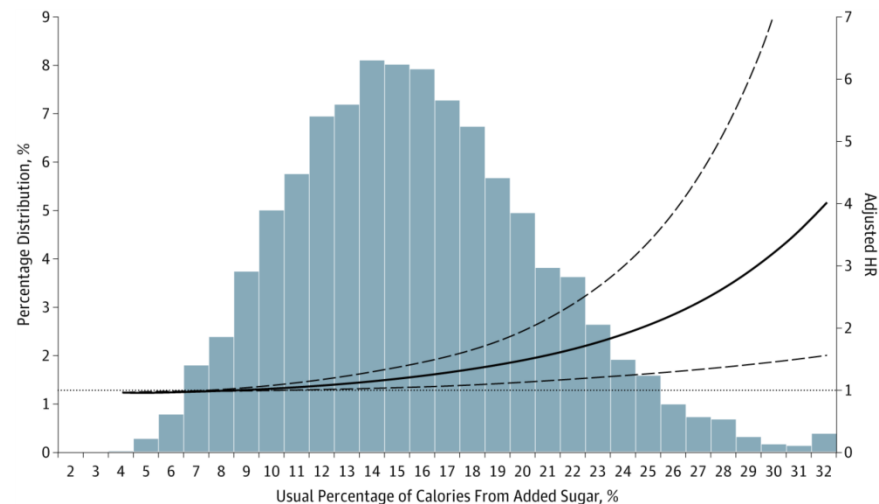


Figure Legend:

Adjusted Hazard Ratio (HR) of the Usual Percentage of Calories From Added Sugar for Cardiovascular Disease Mortality Among US Adults 20 Years or Older: National Health and Nutrition Examination Survey Linked Mortality Files, 1988-2006. Histogram of the distribution of usual percentage of calories from added sugar in the population. Lines show the adjusted HRs from Cox models. Midvalue of quintile 1 (7.4%) was the reference standard. The model was adjusted for age, sex, race/ethnicity, educational attainment, smoking status, alcohol consumption, physical activity level, family history of cardiovascular disease, antihypertensive medication use, Healthy Eating Index score, body mass index, systolic blood pressure, total serum cholesterol, and total calories. Solid line indicates point estimates; dashed lines indicate 95% CIs.

Study design



Months

0

6

12

18

*

*

*

*

641 kids, age 5-11.

Already used to bringing a daily sugary drink to school

n = 319

Sugar-free drink, 0 kcal

n = 322

Sugar-sweetened ,104 kcal

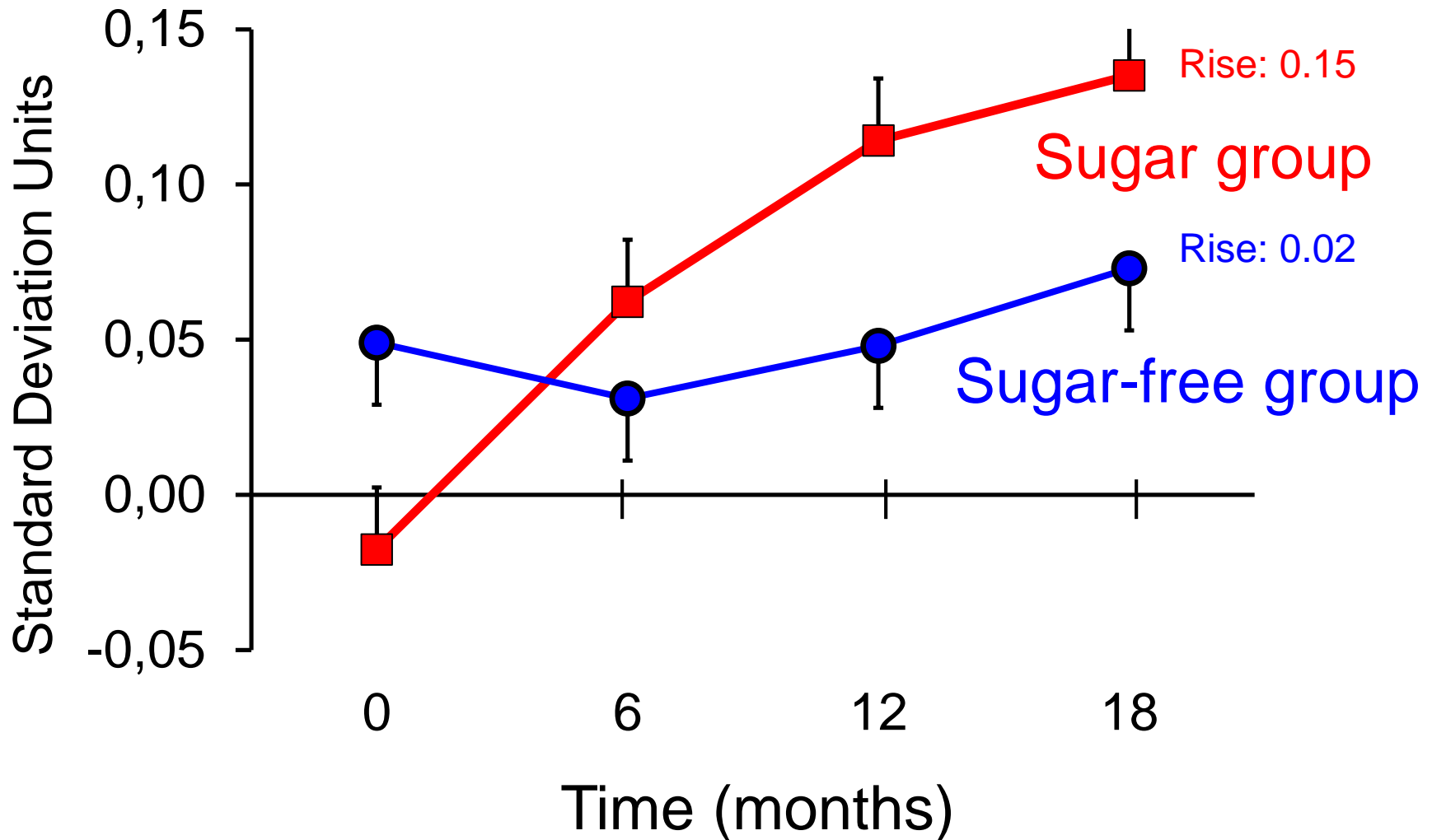


Stratified and individually randomized

Study drink replaced habitual sugary drink at school and at home

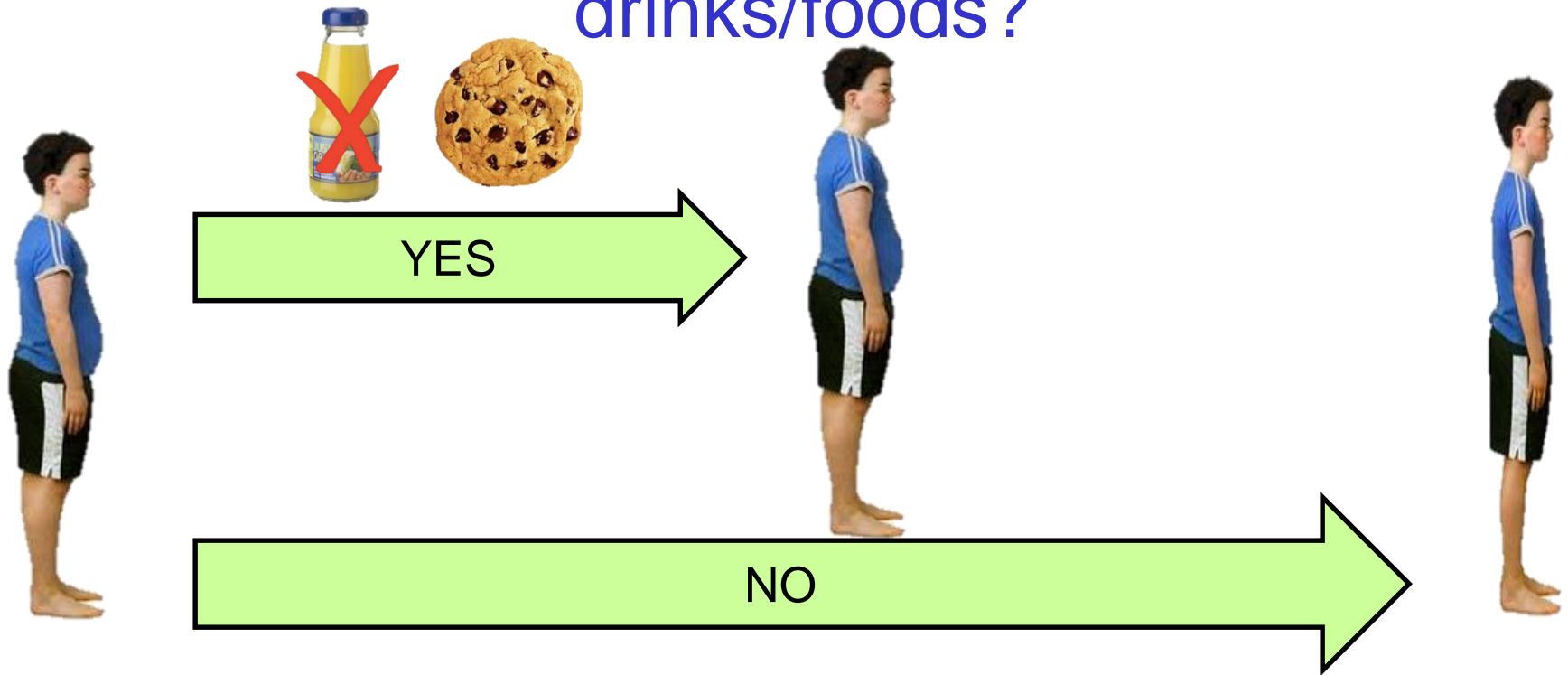


Primary endpoint: BMI z-score in completers (n = 477)



Summary

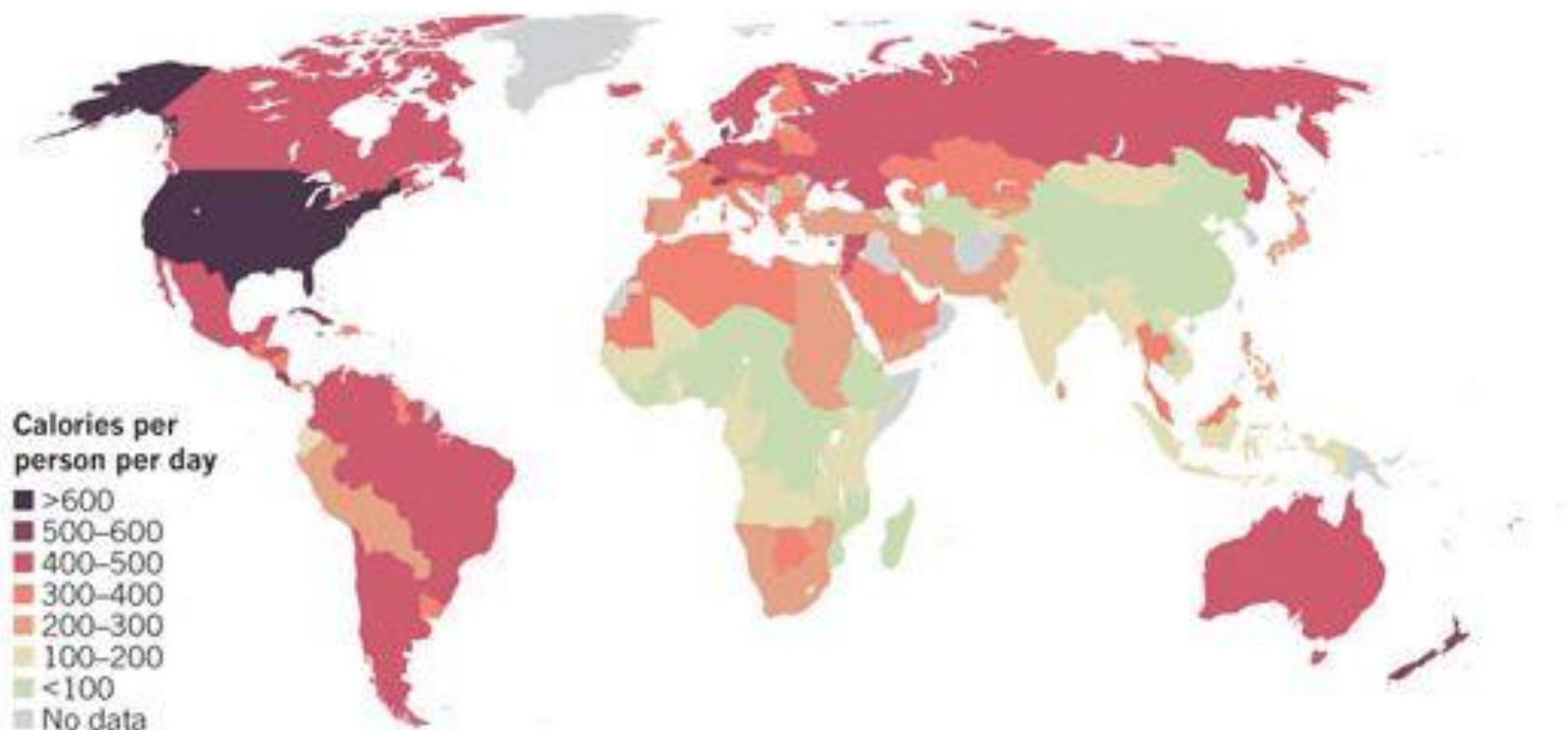
Sugar-free drinks > increase intake of other drinks/foods?



Removal of sugar from drinks is only PARTLY compensated by calories from other drinks/food

THE GLOBAL SUGAR GLUT

Global sugar supply (in the form of sugar and sugar crops, excluding fruit and wine) expressed as calories per person per day, for the year 2007.



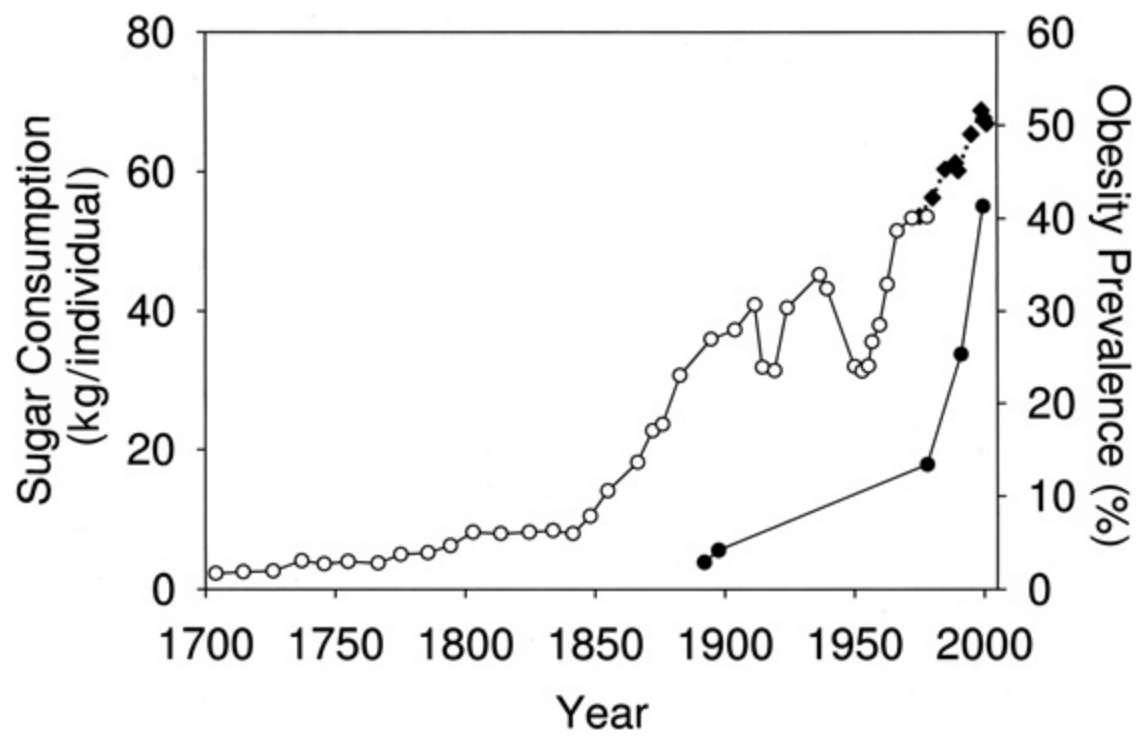
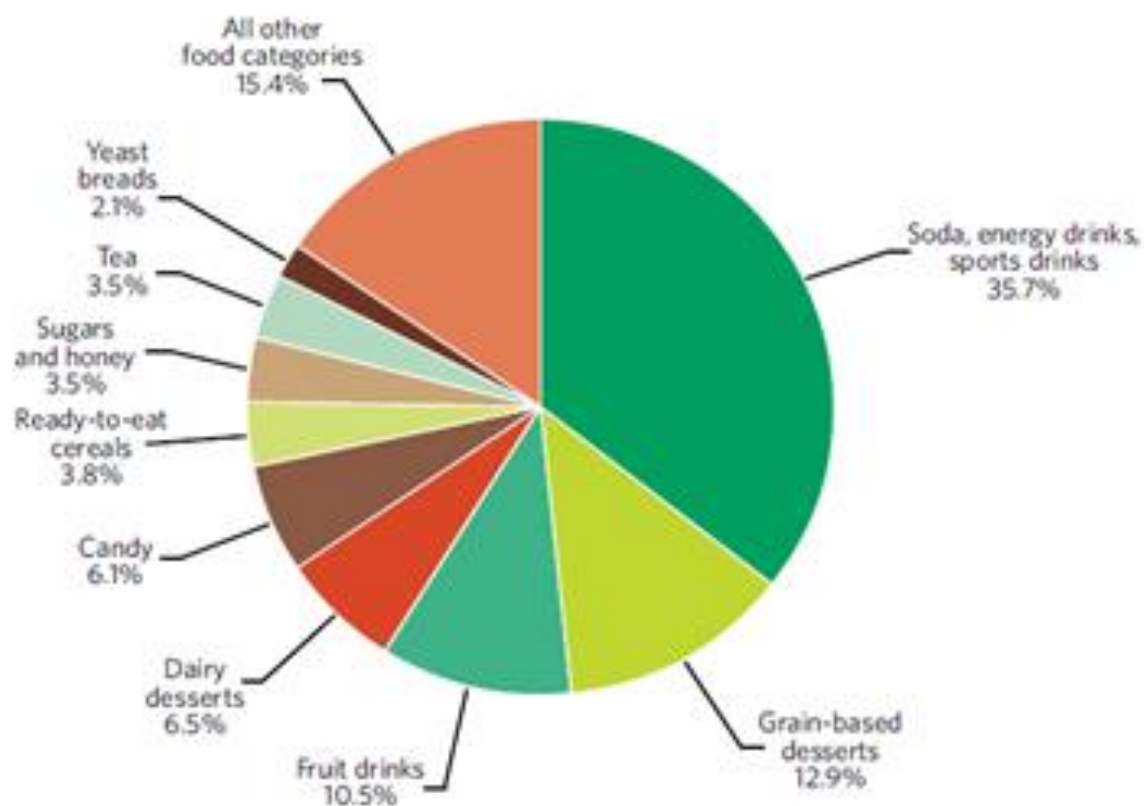


FIGURE 3-6. Sources of Added Sugars in the Diets of the U.S. Population Ages 2 Years and Older, NHANES 2005-2006^a



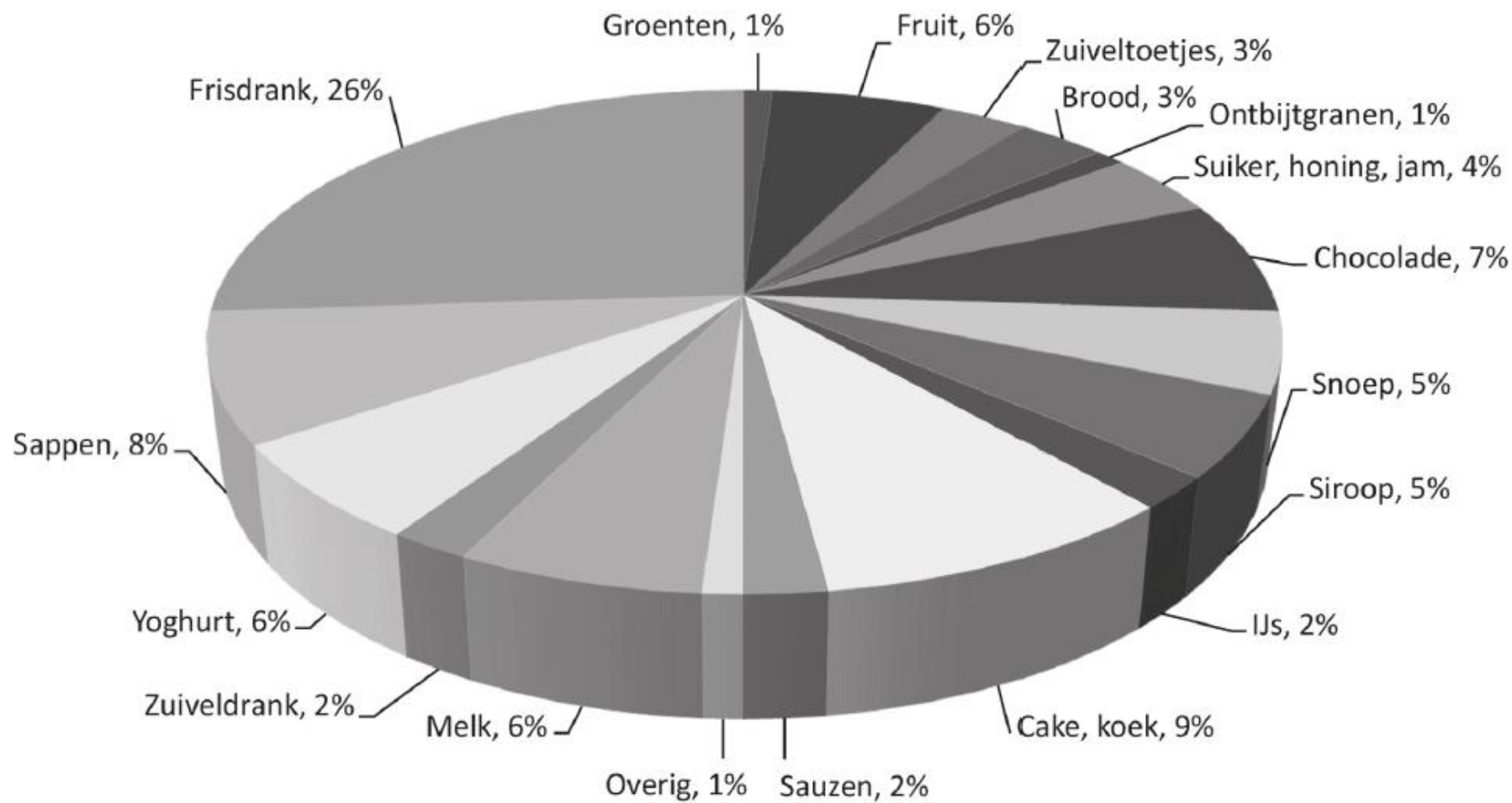
a. Data are drawn from analyses of usual dietary intake conducted by the National Cancer Institute. Foods and beverages consumed were divided into 97 categories and ranked according to added sugars contribution to the diet. "All other food categories" represents food categories that each contributes less than 2% of the total added sugar intake.

Source: National Cancer Institute. Sources of added sugars in the diets of the U.S. population ages 2 years and older, NHANES 2005-2006. Risk Factor Monitoring and Methods. Cancer Control and Population Sciences. http://riskfactor.cancer.gov/diet/foodsources/added_sugars/table5a.html. Accessed August 11, 2010.

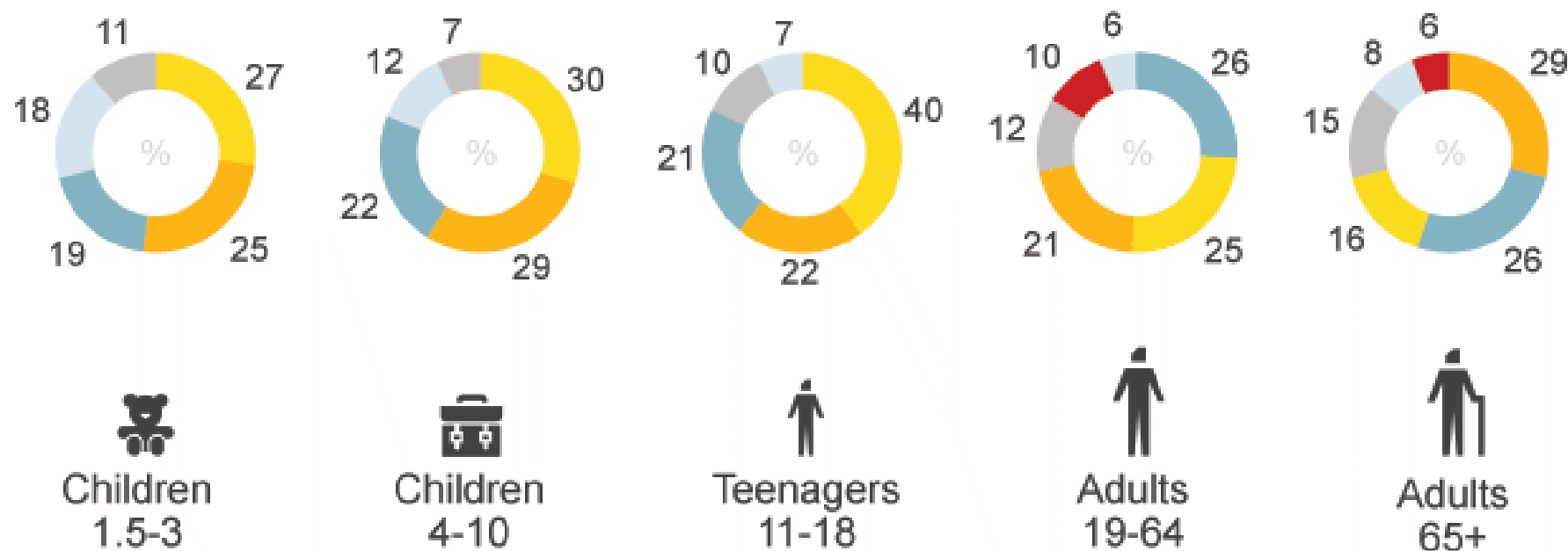
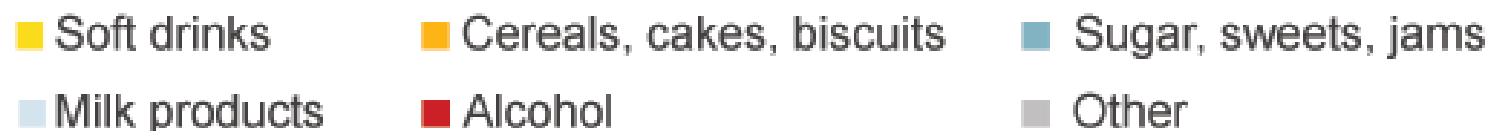


Tabel 1. De consumptie van mono- en disachariden per persoon per jaar

	(gemiddelde ± std)			
Totaal mono- en disachariden	44.4	±	16.8	kg/jaar
Fructose uit mono- en disachariden	17.7	±	7.3	kg/jaar
Glucose uit mono- en disachariden	21.0	±	7.8	kg/jaar
Vrij glucose	5.0	±	2.4	kg/jaar
Vrij fructose	5.8	±	2.6	kg/jaar
Lactose	5.7	±	3.6	kg/jaar
Maltose	1.3	±	0.4	kg/jaar
Sacharose	23.9	±	11.9	kg/jaar



Where different age groups get their added sugar from



Source: National Diet & Nutrition Survey, rolling programme 2008-12

Working off the calories

Like big soft drinks? Here's how many calories you're getting and what you'll have to do to burn them off.

SIZE



12oz
Can of
Coca-Cola



16oz
Rockstar Energy
Drink Can



20oz
Arizona Lemon
Ice Tea



30oz
7-Eleven Big
Gulp filled with
Coca-Cola



40oz
7-Eleven Super Big
Gulp filled with
Mountain Dew



50oz
7-Eleven Double
Gulp filled with
Barq's Root Beer



52oz
7-Eleven Xtreme Gulp
filled with Dr. Pepper

CALORIES

140

248

270

371

568

694

780

AMOUNT OF ACTIVITY IT WILL TAKE TO BURN THE CALORIES

One hour
of piloting
a plane



An hour
of tai chi



An hour of ballroom
dancing or bagging
leaves and cutting grass



An hour of
downhill skiing



It won't be until the sixth
mile of your run that your
body will start converting
the last hundred of these
calories.



Walk for four hours straight at
2 mph and you'd burn these
calories. (Make that five hours
for the 64 oz.
Double Gulp,
officially
discontinued
in April but still
available in
some stores.)



Riding your bicycle from the
7-Eleven on Liberty Avenue,
Downtown, to the 7-Eleven
in Washington,
Pa. — roughly
30 miles —
would burn off
your Xtreme
Gulp.



Sources: 7-Eleven Corporate, the Mayo Clinic and the American College of Sports Medicine. Burned calorie counts are for weights between 160 and 200 pounds

PostGazette

Eat Less
High Sugar Fruits
which spike blood sugar



Banana

Melons

Mango



Pineapple



Peach



Plum



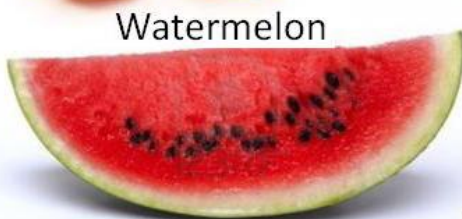
Most apples



Orange
& juice



Grapes



Watermelon



Raisins, dates, dried fruits

Eat More
Low Sugar Fruits
for balanced energy



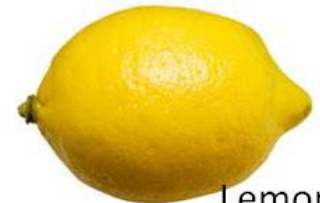
Grapefruit



Granny Smith Apple



Lime



Lemon



Kiwi



Tart berries



7 Side Effects of Soda

Phosphoric Acid - Weakens bones and rots teeth

Excessive artificial sweeteners makes you crave more

Carmel Color - Made from the chemical caramel, is purely cosmetic, it doesn't add flavor yet is tainted with carcinogens.

Formaldehyde - Carcinogen, it is not added in soda but when you digest aspartame, it will break down into 2 amino acids and methanol = formic acid + formaldehyde (diet sodas)



High Fructose Corn Syrup is a concentrated form of sugar, fructose derived from corn. It increases body fat, cholesterol and triglycerides and it also makes you hungry.

Potassium Benzoate = preservative that can be broken down to benzene in your body. Keep your soda in the sun and benzene = Carcinogen

Food Dyes = impaired brain function, hyperactive behavior, difficulty focussing, lack of impulse control.

Dave Sommers

Melktand in een glas met cola: tanderosie



The Bliss Point



For nutrients that we like and therefore seek out, there is a particular concentration that makes food most palatable.

1. FAT 2. SUGAR 3. SALT

These are nutrients that have been *so important* to us in our evolutionary history that natural selection favored genetic variations that:

1. Enable us to taste these nutrients.

2. Make our brains respond with a "reward" [we *like* it, it tastes *good*].

The reward center of the brain gives us a little jolt of endorphins for our reward.

Endorphins are the endogenous morphine-like chemicals that work on the same neuronal receptors as opiate drugs.

3. Make our brains *remember* what we did to get that reward, and make us *want* to do it again.

This is run by the neurotransmitter, dopamine. Reward-seeking actions can become unbelievably powerful, which is what addiction is.

In combination, sugar, fat, and salt act synergistically: combinations are far more addictive than any single one alone. Mice, for instance, will work as hard to get a mixture of corn oil and sugar as they will to get cocaine.

The food industry tries very hard to make each food contain combinations of 2 or 3 of these nutrients at their Bliss Points. It's done to encourage us to buy the food again, because we really like it.

That's why it's so hard to stay away from some of these foods. For those of us who are sensitive to the power of endorphins and dopamine, it becomes virtually impossible not to over-eat.

$$\left(\frac{\text{Salt} + \text{Fat}^2}{\text{Satisfying Crunch}} \right)$$

× Pleasing Mouth Feel = A Food Designed to Addict






$$\left(\frac{\text{Food CEOs + Greed}}{\text{Food Science}} \right) + \text{Bliss Point} = \text{America's Breaking Point}$$



Nutrition Facts

Serv. Size 86 Pieces (7g / about 1/2 Cup)

Servings Per Container About 6

Amount Per Serving

Calories 25

Calories from Fat 0

Total Fat:	0g
Saturated Fat:	0g
Trans Fat:	0g
Cholesterol:	0mg
Sodium:	0mg
Potassium:	10mg
Total Carbohydrates:	6g
Dietary Fiber:	0g
Sugar:	1g
Protein:	0g

%Daily Value	Infants 0-1	Children 1-4
Protein:	0%	0%
Vitamin A:	0%	0%
Vitamin C:	0%	0%
Calcium:	4%	4%
Iron:	10%	15%
Vitamin E:	20%	10%
Thiamin:	10%	10%
Riboflavin:	10%	10%
Niacin:	10%	10%
Vitamin B6:	10%	10%
Vitamin B12:	10%	10%
Zinc:	15%	10%

Ingredients

RICE FLOUR, WHOLE WHEAT FLOUR, WHEAT STARCH, **SUGAR**, WHOLE GRAIN OAT FLOUR, DRIED APPLE PUREE, TRI- AND DICALCIUM PHOSPHATE, MIXED TOCOPHEROLS (FOR FRESHNESS), **SOY** AND SUNFLOWER LECITHIN, ZINC SULFATE, **NATURAL BLUEBERRY VANILLA FLAVOR**, ALPHA TOCOPHERYL ACETATE (VITAMIN E), NIACINAMIDE (A B VITAMIN), BLUEBERRY JUICE CONCENTRATE, ELECTROLYTIC IRON, PYRIDOXINE HYDROCHLORIDE (VITAMIN B6), RIBOFLAVIN (VITAMIN B2), THIAMIN HYDROCHLORIDE (VITAMIN B1), VITAMIN B12 (CYANOCOBALAMIN)

Key:

GMOs, **flavorings**



Nutrition Facts

Serv. Size 18 Pieces (7g)

Servings Per Container 6

Amount Per Serving

Calories 35

Calories from Fat 15

Total Fat: 2g

Saturated Fat: 0g

Trans Fat: 0g

Cholesterol: 0mg

Sodium: 50mg

Potassium: 15mg

Total Carbohydrates: 4g

Dietary Fiber: 0g

Sugar: 0g

Protein: 0g

%Daily Value	Infants 0-1	Children 1-4
Protein:	0%	0%
Vitamin A:	0%	0%
Vitamin C:	0%	0%
Calcium:	6%	4%
Iron:	10%	15%
Vitamin E:	20%	10%
Zinc:	15%	10%

Protein: 0%

Vitamin A: 0%

Vitamin C: 0%

Calcium: 6%

Iron: 10%

Vitamin E: 20%

Zinc: 15%

Ingredients

WHOLE GRAIN YELLOW CORN MEAL, CORN OIL, DRIED CHEDDAR CHEESE (CULTURED MILK, SALT, ENZYMES), TRICALCIUM PHOSPHATE, NATURAL CHEESE FLAVOR, SALT, MALTODEXTRIN, MIXED TOCOPHEROLS (FOR FRESHNESS), DISODIUM PHOSPHATE, ANNATTO EXTRACT COLOR, GUM ACACIA, ALPHA TOCOPHERYL ACETATE (VITAMIN E), ZINC OXIDE, ELECTROLYTIC IRON

Key:

GMOs, sourced from dairy cows treated with rBGH growth hormones, flavorings, salt

[click for full nutrition information](#)

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SUGAR COATING BABY SNACKS

RAFFERTY'S GARDEN YOGHURT BUTTONS STRAWBERRY



MORE THAN
**60%
SUGARS***

KIDDYLICIOUS APPLE FRUIT WIGGLES



MORE THAN
**60%
SUGARS***

RAFFERTY'S GARDEN FRUIT SNACK BAR APPLE



MORE THAN
**40%
SUGARS***

HEINZ LITTLE KIDS CEREAL BARS APPLE & BLUEBERRY



MORE THAN
**40%
SUGARS***

*INCLUDES BOTH ADDED AND NATURALLY OCCURRING SUGARS

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Conclusies

- Inname van vrije suikers is te hoog en geassocieerd met verhoogd risico op 'welvaartsziekten'.
- Intensieve marketing van suikerrijke voedingsmiddelen gericht op (jonge) kinderen zorgt voor voorkeur voor zoet.