

The Effect of Nutrition on Crime and Delinquency

Stephen J. Schoenthaler, Ph.D.
Professor of Sociology and Criminal Justice

California State University, Stanislaus
1 University Circle
Turlock California 95255
sschoenthaler@csustan.edu

Barbara Reed, an Ohio Chief Probation Officer, testified before the US Senate that none of 252 probationers who underwent dietary changes were re-arrested.

11 quasi-experimental studies followed involving 7,406 offenders, two of which used deception to control for any psychological.

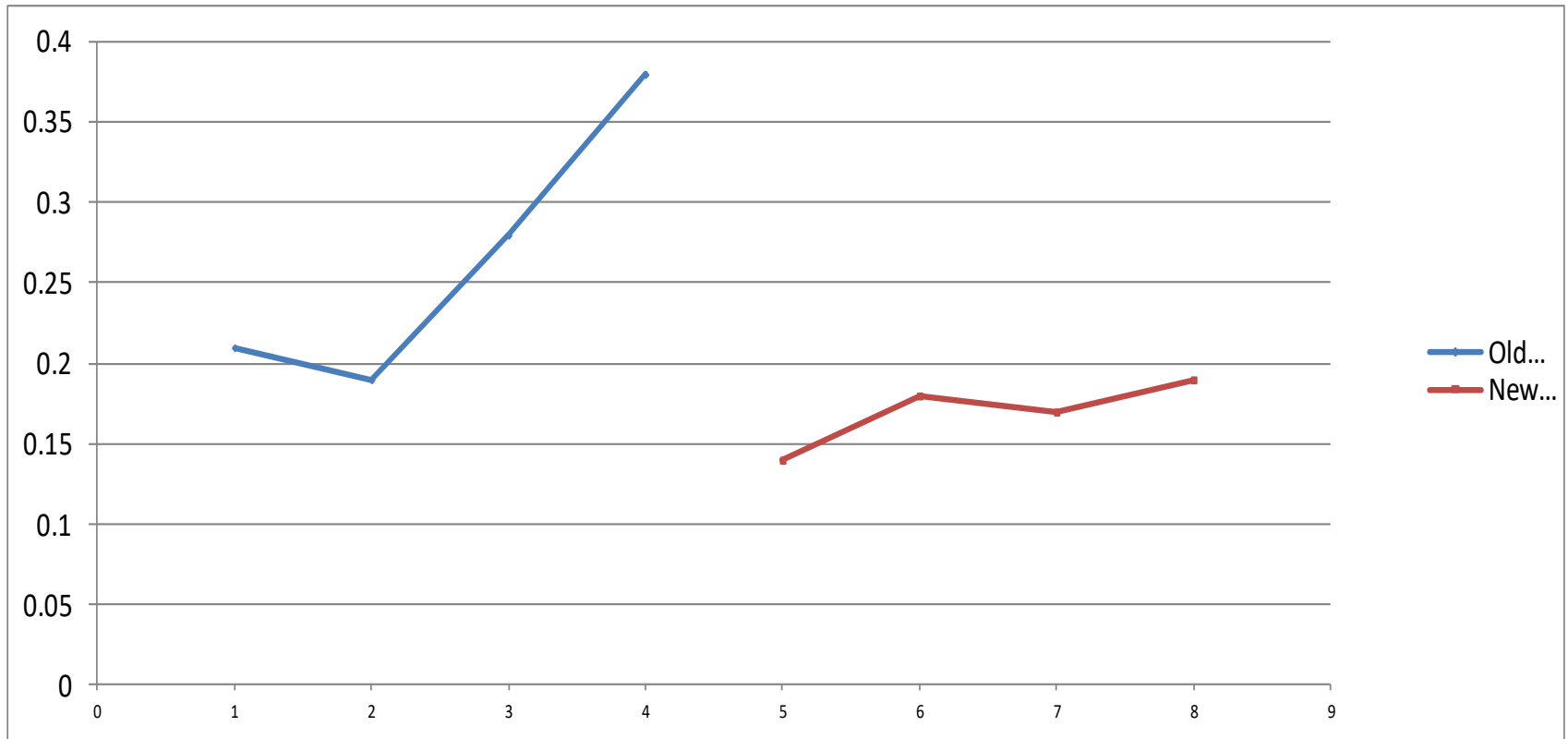
Each study reported less serious incidents by offenders.

The 7,406 participants produced a 48% reduction in serious incidents due to improvements in 20% of the offenders.

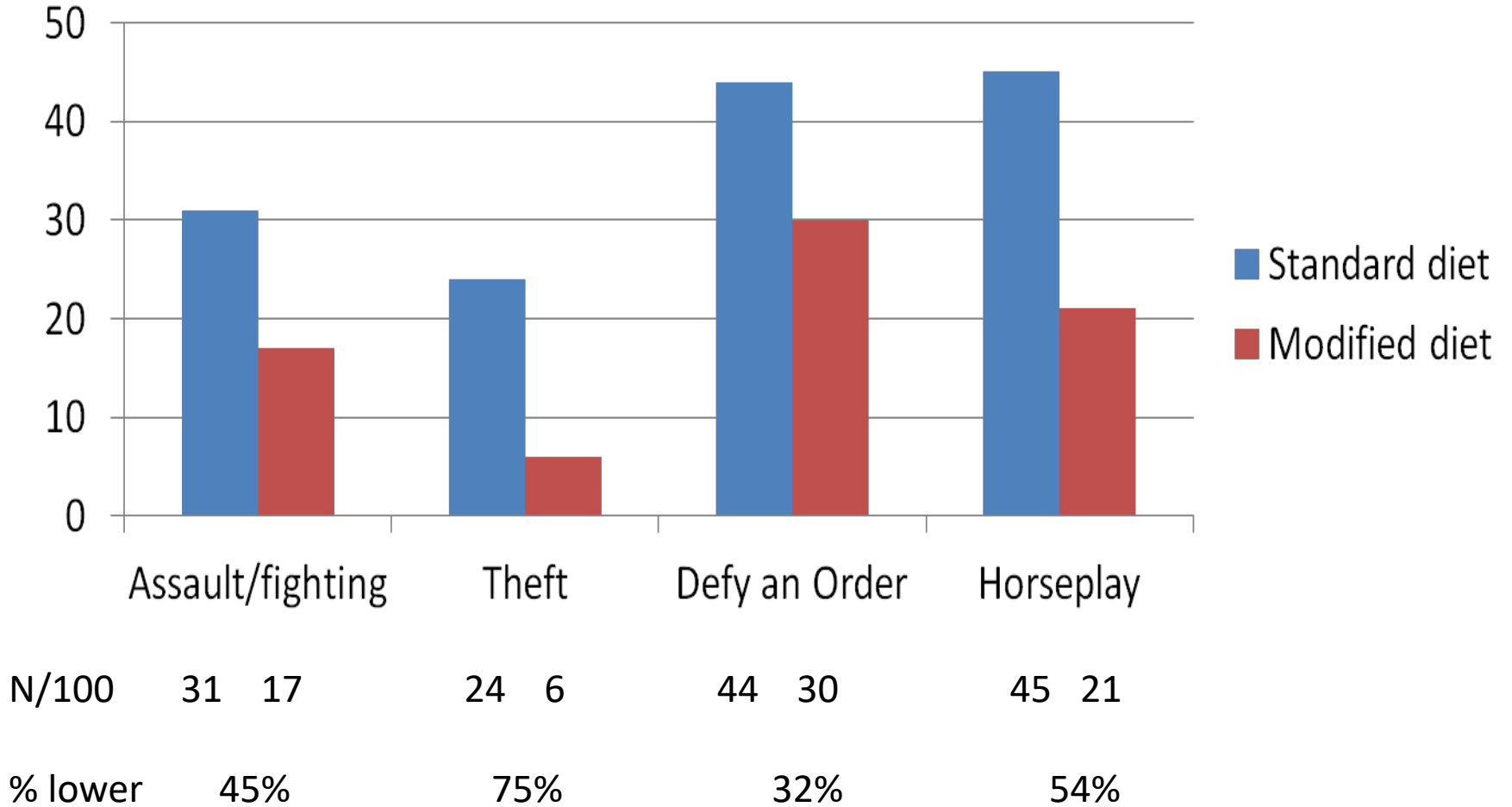
The institutions that used deception were just as successful. Staff and offenders were told the changes had been made to save money.

The seminal Tidewater Detention Home Time-Series Study

Mean serious incident reports per detainee per day for eight quarters over two years (1981-1983) on the original and “lower sugar” modified diet among 276 delinquents



Types of Serious Rule Violations per Juvenile per 100 Days inside the Tidewater Detention Home Study divided by n of residents



Serious incident reports fell **45.6%** among 4,534 delinquents in 10 sites that changed meal composition to increase vitamin consumption and **21%** in the site that only changed snacks to do so.

Location	Year	Cases	Dietary Intervention	Decrease in incident reports
The Tidewater Detention Center (VA)	1982	276	Low Sucrose	48%
<u>Three</u> Los Angeles Detention Halls	1983	1,382	Tidewater diet	47%
<u>Three</u> Los Angeles Juvenile Camps	1983	289	Tidewater diet	54%
Alabama Division for Youth, Vacca	1983	101	Tidewater diet	42%
Alabama Division for Youth, Mt. Meiggs	1983	72	Tidewater diet	36%
Stanislaus County Detention Center	1983	2,005	Snack foods only	21%
Fairfax County Detention Center (VA)	1984	481	Juice @ all meals	47%

The first correlational study

The **New York** Legislature sponsored this in the Green Correctional Facility in 1985, a center for incarcerated male adults.

22% were at great risk of at least 5 water-soluble vitamin deficiencies.

These 22% were **31%** more likely to commit incident reports than all others.
($p < .001$).

Number of Incident Reports per inmate	N of offenders with <u>LOW TO MEDIUM RISK</u> of vitamin deficiencies	N of offenders with <u>VERY HIGH RISK</u> of vitamin deficiencies	Column totals
0	45 (41%)	3 (10%)	48 (35%)
1 - 15	64 (59%)	27 (90%)	91 (65%)
Row totals	109 (78%)	30 (22%)	139

The second correlational study

The California Youth Authority successfully replicated the New York study with 80 male confined wards, aged 15 to 16 years in Stockton, California.

45% were at great risk of at least 5 water-soluble vitamin deficiencies.

These 22% were **21%** more likely to commit incident reports than all others.
($p < .001$).

Number of Incident Reports	N of offenders with <u>LOW TO MEDIUM RISK</u> of vitamin deficiencies	N of offenders with <u>VERY HIGH RISK</u> of vitamin deficiencies	Column totals
0	14 (32%)	4 (11%)	18 (23%)
1 to 7	30 (<u>68%</u>)	32 (<u>89%</u>)	62 (77%)
Row totals	44 (55%)	36 (<u>45%</u>)	80

The third correlational study

A Fairfax County Virginia Juvenile Detention Center successfully replicated the New York study on 24 confined delinquents, aged 13 to 17 years

28% were at great risk of at least of water soluble vitamin deficiencies.

These 22% were **28%** more likely to commit serious incidents.

Number of Incident Reports	N of offenders with <u>LOW TO MEDIUM RISK</u> of vitamin deficiencies	N of offenders with <u>VERY HIGH RISK</u> of vitamin deficiencies	Column totals
0	14 (<u>78%</u>)	3 (<u>50%</u>)	17 (23%)
1 to 15	4 (22%)	3 (50%)	7 (77%)
Row totals	18 (75%)	6 (<u>25%</u>)	24

- By 1985, it was known that (a) serious offenses were more likely to occur among those who were at high risk of nutritional deficiencies and (b) lowering such risk dietarily was always followed by less violent and non-violent offenses.
- We also knew that the universally accepted standard of proof in medical science requires (a) a true experimental design, (b) independent replication and (c) publication in scientific journals that require scrutiny of the articles by outside experts before publication.
- A sufficient experimental design would have to mimic a new drug trial with some participants receiving fake pills called placebos and others, at random, receiving the experimental drug, or in this case, the nutrients in pill form.
- As a preliminary step, we tested whether using nutrients in tablet form, could produce the same results found in the states that changed diet.

Serious incident reports fell 43% in the Oklahoma Children's Center and 37% in a California Youth Authority site after distributing physiologic dose vitamin-mineral supplements

43% reduction in Oklahoma $t = 3.41, p = .002$

6 subjects eliminated all incidents

Baseline Intervention

85

0

11 produced little change

Baseline Intervention

161

140

37% reduction in California $t = 3.26, p = .002$

16 subjects eliminated all incidents

Baseline Intervention

47

0

7 produced little change

Baseline Intervention

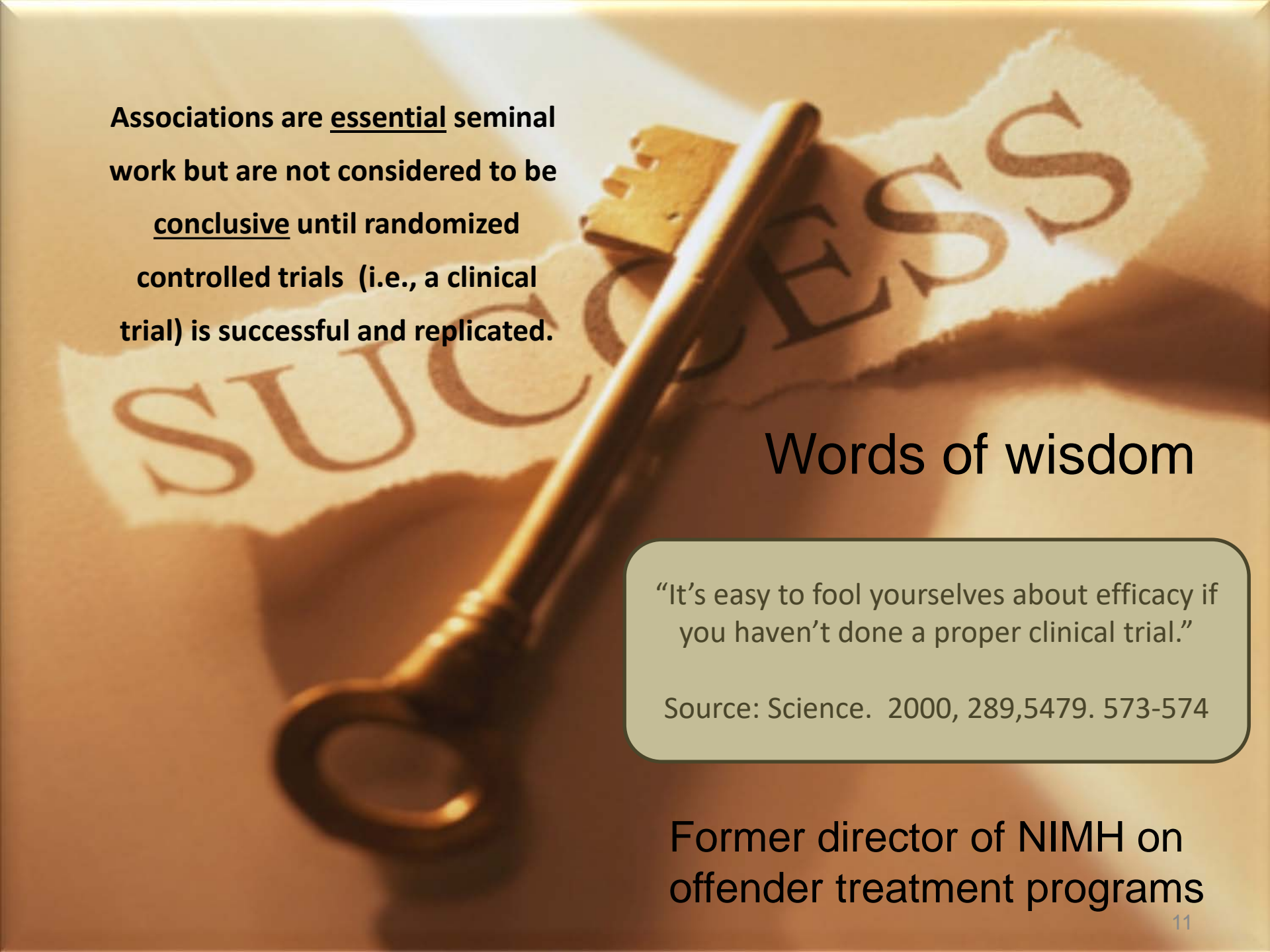
33

50

132 to 0 combined

194 to 190 combined

The three correlational trials in NY, VA, and CA in conjunction with these results in CA and OK justified funding for randomized parallel controlled trials comparing physiologic dose vitamin-mineral supplements and placebos to determine if these relationships were causative

A golden key is positioned diagonally across the frame, resting on a piece of torn, light-colored paper. The word "SUCCESS" is printed in large, dark, serif capital letters on the paper, with the key partially obscuring it. The background is a warm, golden-brown color with soft shadows and highlights, suggesting a textured surface.

Associations are essential seminal work but are not considered to be conclusive until randomized controlled trials (i.e., a clinical trial) is successful and replicated.

Words of wisdom

“It’s easy to fool yourselves about efficacy if you haven’t done a proper clinical trial.”

Source: Science. 2000, 289,5479. 573-574

Former director of NIMH on offender treatment programs

Meta-Analysis of 5 Randomized Controlled Trials Comparing the Effects of Physiologic Doses of Vitamin-Mineral Supplements versus Placebo on Serious Antisocial Behavior in Institutional Settings

Senior Author	Location	Type of Site	Subjects	Ages	N	Decrease	P	Year
Schoenthaler	Oklahoma	Corrections 1 site	M & F	12-17	62 16	28% 92%	< .005	1987
Schoenthaler	California	Corrections 2 sites	M	18-25	402	39%	< .01	1993
Schoenthaler	Arizona	Schools 2 sites	M & F	6-11	468	47%	<.02	2000
Gesch	England	Corrections 1 site	M	18+	231	35%	<.001	2002
Zalberg	Holland	Corrections 7 sites	M	18-25	221	35%	.034	2009

Pre & post vitamin blood-concentrations in Oklahoma children whose violence fell 92%

Subject	Group	Change in Diet	Baseline Violence	Violence during the trial	Vitamin C		Thiamin B ₁		Niacin B ₃		Pantothenic Acid B ₅		Pyridoxine B ₆		Folate B ₉	
					Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	P	Yes	23	1	-	-	-	-	-	-	-	-	25	-	-	-
2	P	Yes	18	1	-	-	24	-	-	-	-	-	-	-	3.3	--
3	P	Yes	9	0	-	-	-	-	-	-	128	-	-	-	3.4	-
4	P	Yes	6	0	-	-	22	-	-	-	-	-	20	26	3.2	-
5	P	Yes	8	2	.50	-	-	-	-	-	-	-	14	-	3.3	-
6	P	Yes	10	2	-	-	22	-	-	-	-	-	23	-	-	-
7	A	Yes	18	1	-	-	-	-	-	-	-	-	27	-	-	-
8	A	Yes	9	0	-	-	24	-	-	-	-	-	-	-	-	-
9	A	Yes	6	0	-	-	19	-	-	-	-	-	-	-	3.4	-
10	A	Yes	5	0	-	-	-	-	-	-	122	-	27	=	-	-
11	A	Yes	6	2	.50-	-	-	-	-	-	-	-	27	-	-	-
12	A	Yes	3	0	-	-	-	-	2.8	-	-	-	25	27	-	-
13	A	No	4	2	-	-	25	-	2.8	-	-	-	25	-	3.0	-
14	A	No	2	0	-	-	-	-	-	-	-	-	28	-	3.4	-
15	A	No	2	0	-	-	-	-	-	-	-	-	18	-	-	-
16	A	No	3	2	-	-	-	-	-	-	-	-	-	-	-	-

Column totals **131** **11** **2** **0** **6** **0** **2** **0** **2** **0** **11** **2** **7** **0**

Values are the cut points above which all 24 who donated blood were non-violent during baseline < 0.55 mg/dl < 26 ng ml⁻¹ < 3.0 ug ml⁻¹ < 142 ng ml⁻¹ < 29 ng ml⁻¹ < 3.6 ng ml⁻¹

A = active vitamin/mineral group P = placebo group - mean a normal blood concentration range

The Effect of Supplementary Nutrients versus Placebo on School Expulsions and Suspensions

A double blind randomized controlled trial

Arizona schoolchildren aged 8 to 12

234 on placebo, 234 on active tablets for 4 months

Analysis on the 80 of the 468 who were expelled at least once during the year

47% less suspensions in the active group

9 of the 10 chronic failures were on placebos

Number of Incidents	40 children on Placebo	40 children on Active
None	7 (18%)	10 (25%)
One	17 (43%)	21 (53%)
Two	7 (18%)	8 (20%)
Three	4 (10%)	1 (2.5%)
Four	2	0
Six	1	0
Eight	1	0
Ten	1	0

A US Population study comparing The Uniform Crime Report Rates (per 100,000 pop.) from 1991 to 2006 with an index of folate status (per 10,000 live births with birth defects)

	Murder and Manslaughter	Aggravated Assault	Forcible Rape	Robbery
National folate deficiency rate	.779	.873	.732	.780

- Folate deficiencies began falling in the 1990s due to CDC recommending and Congress requiring grain fortification with folate to lower birth defects.**
- Both US crime and birth defects rates fell 50% over these 16 years.**
- Canada passed identical legislation. Its violence and birth defects fell a third.**
- The UK did not adopt the US and Canadian folate policies. Its crime rose 4% percent**

5 water-soluble vitamins are essential for the brain to create energy that affects behavior

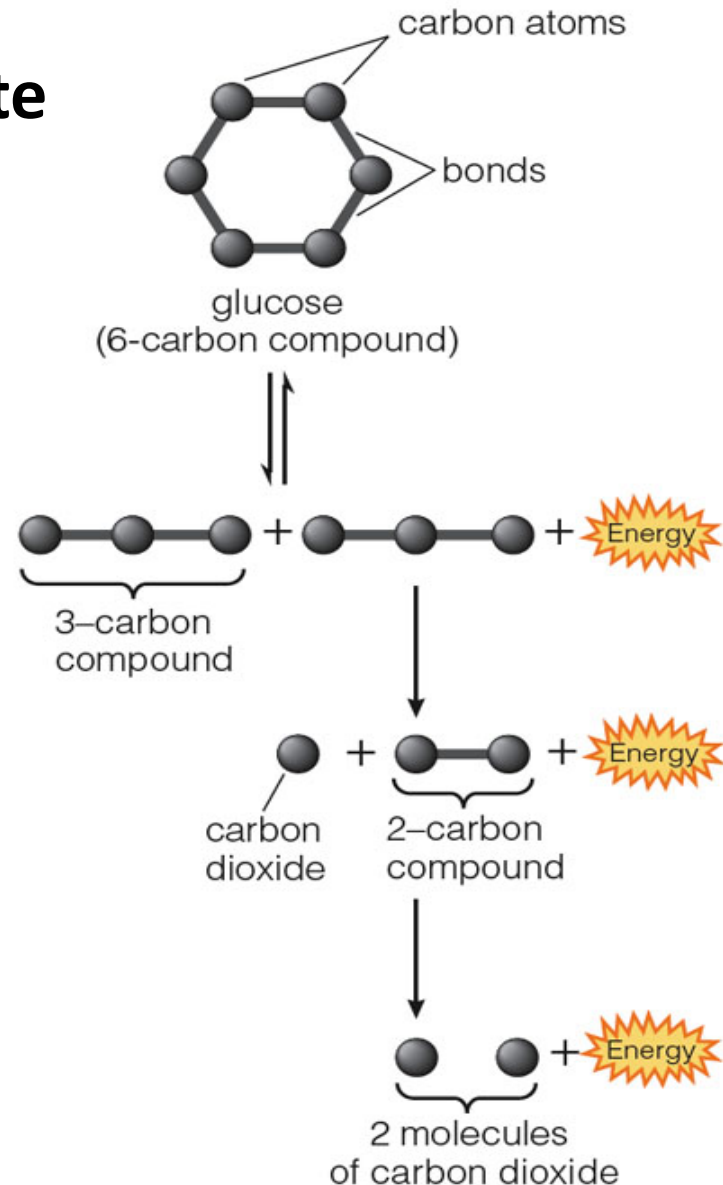
Glucose is the brain's primary fuel (its breakdown is called glycolysis) .

It consists of 6 carbons attached to 12 hydrogen and 6 oxygen molecules.

The sun's energy is stored in the bonds that hold the carbons together.

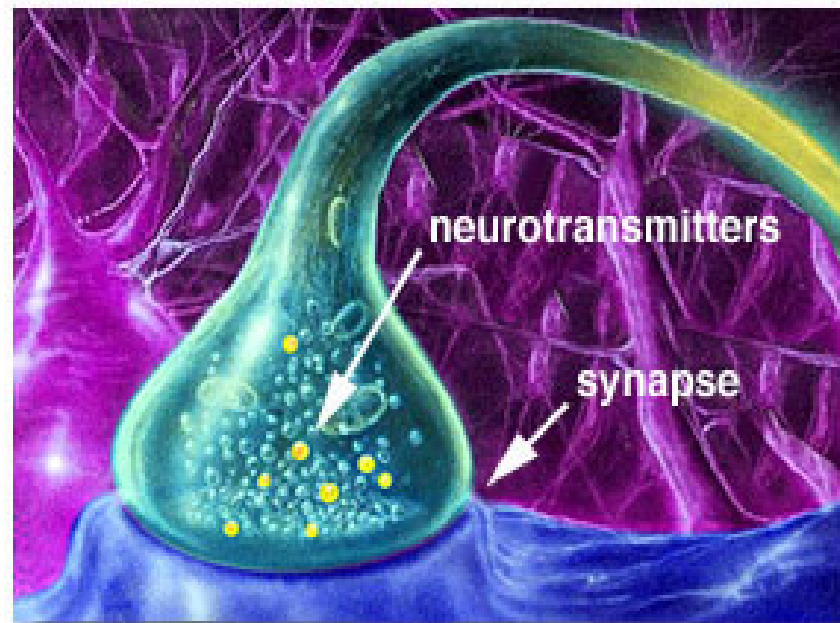
This energy is released when the carbons are separated in three sequential steps.

These 3 steps require 5 B vitamins as coenzymes: Thiamin, Riboflavin, Niacin, Pantothenic Acid, and Biotin.



Three more water soluble vitamins (pyridoxine, folate, and vitamin C) are essential for the brain to synthesize neurotransmitters such as dopamine and serotonin out of amino acids such as tryptophan and tyrosine. A deficiency of any of these vitamins impairs the ability of a sending neuron to communicate across the synapse (a gap) separating it from the receiving neuron.

If either the synthesis of energy from glucose is impaired or the synthesis of neurotransmitters is impaired, brain signals that should have been transmitted are too weak to be moved to the next neuron.



This impairs brain function and changes behavior.

Change in Brain Function among 2 habitually violent Oklahoma Offenders who received active tablets

Case	Wave	Pre-Eyes Open	Pre-Eyes Shut	Abnormal Region	Post-Eyes Open	Post-Eyes Shut	Abnormal Region
1	Delta	Normal	Normal		Normal	Normal	
	Theta	Normal	Normal		Normal	Normal	
	Alpha	Normal	Normal		Normal	Normal	
	Beta1	-2.1	-2.0	Posterior	Normal	Normal	
	Beta2	-2.3	-2.3	Posterior	Normal	-2.1	Posterior
	Beta3	-2.2	-2.2	Posterior	Normal	-2.5	Posterior
2	Delta	+4.3	+2.5	Posterior	Normal	Normal	
	Theta	+3.8	Normal	Occipital	Normal	Normal	
	Alpha	+4.3	Normal	Vertex	Normal	Normal	
	Beta1	+2.2	Normal	Posterior	Normal	Normal	
	Beta2	+3.2	Normal	Parietal	Normal	Normal	
	Beta3	Normal	Normal		Normal	Normal	

Clinical symptoms of B vitamin deficiencies verifiable in blood

**Tension/anxiety
Depression
Irritability/anger
Confusion that can progress to psychosis
Impaired memory
Fatigue/ weakness
Abnormal brain waves**

Clinical signs of B vitamin deficiencies verifiable in blood

**Filliform Papillary Edema
Fungiform Papillary Edema
Bilateral Angular Chelosis**

**Demographic groups at highest risk of vitamin deficiencies measured in blood
taken from the Center for Disease Control population studies**

Males significantly higher than females	4:1
Teenagers significantly higher than adults and preteens	6:1
Blacks significantly higher than Whites	5:1

A clinical signs of moderate B vitamin malnutrition

- **Filliform and fungiform papillary edema is due to B vitamin deficiencies that impair neurotransmitter metabolism and brain electrical metabolism. This can be corrected by either eating food groups and quantities as established by the National Academies of Sciences or with a B complex set at the Daily Values for a person needing 2000 calories per day unless drugs and or absorption is an issue.**

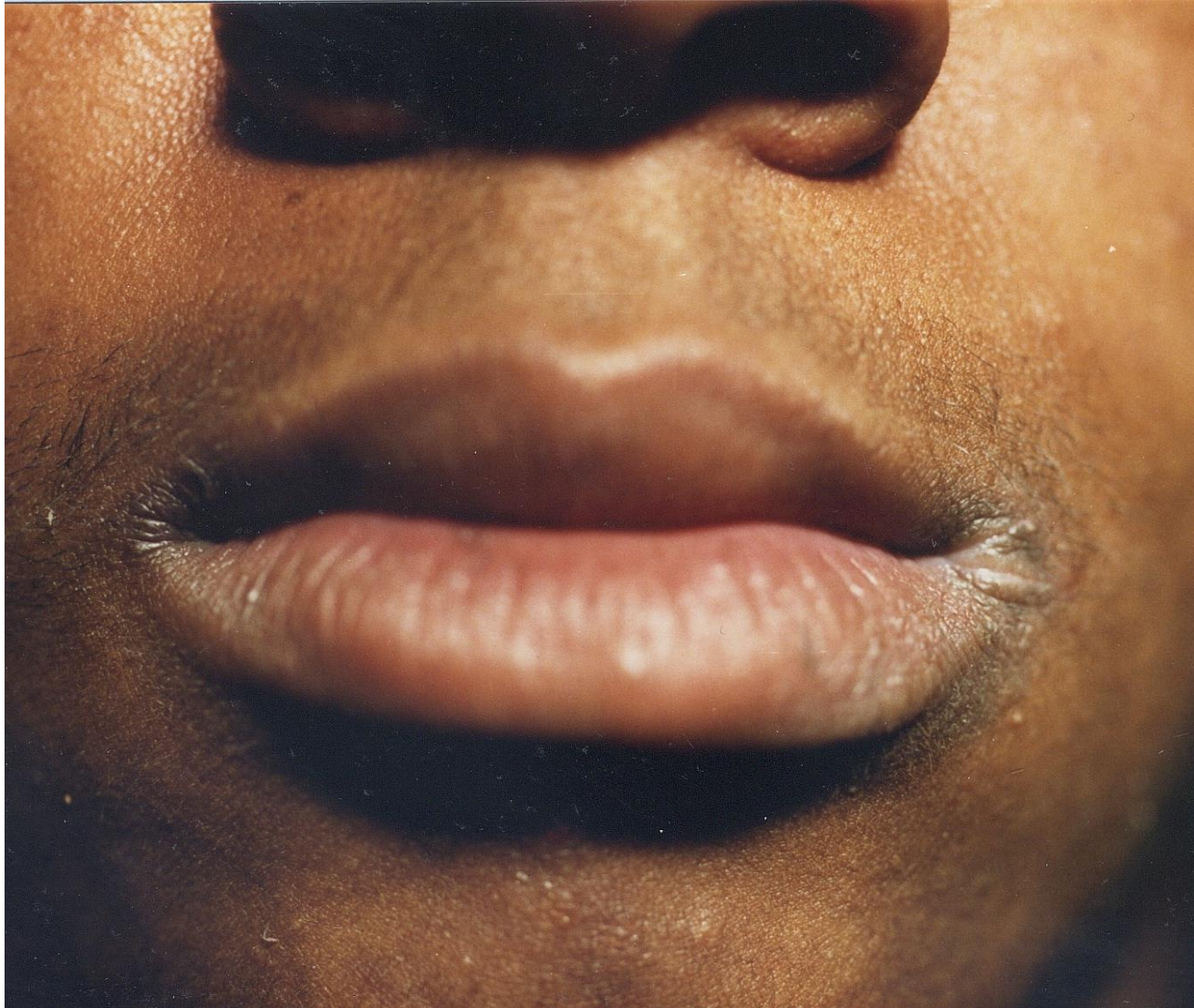


Mild fungi-form papillary edema



Bilateral Angular Chelosis

Symmetrical cracks and scarring on both corners of the mouth



The symptoms of brain iron deficiency on mental health and behavior

remember iron is required for red blood cells to mature and to carry sufficient oxygen to the mitochondria to make energy through glycolysis. Deficiencies cause the following:

Fatigue

Exhaustion

Clumsiness

Irritability

Anger

Aggression

Mental confusion


Lowered intelligence

Learning disabilities

Poor memory

Inability to appreciate the consequences of actions

Our Conclusions

A golden key is positioned diagonally across the frame, resting on a piece of torn, aged paper. The word "SUCCESS" is printed in a serif font on the paper, with the key's head partially covering the letters. The lighting is warm and dramatic, creating strong highlights and deep shadows.

Paying attention to the biological, sociological & psychological causes of crime improves treatment effectiveness

Common explanations of Criminality

The variables that have been repeatedly correlated with crime and delinquency, and are widely believed to cause such behavior, include the following factors that are related to both poverty and malnutrition

urban slums
academic failure
low IQ
dropping out of school
insufficient school nutrition programs
broken homes
alcoholism
drug abuse
poor physical health
poor mental health including tension, anger and depression

We can only wonder how much the above social problems could be reduced by paying attention to the nutritional status of children too

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