Vitamins: The Get-Smart Pills ?

Daryi Maseck, B.A. Engr., M.A., Ed.[1]

Summary

The new girl in our fourth grade fought with everyone, couldn't read, couldn't write her own name and couldn't count. She had an IQ of 100 but apparently could not learn. Her ambling gait changed to skipping after she got school lunches and vitamin tablets, but there was no sure way to tell if her ability to learn had improved or her behavior had changed.

To find out whether vitamins would affect learning ability vitamin tablets were given to half my class of the slowest readers in the school. Classroom policies of non-criticism and freedom permitted a *study of differences in behavior.*

Standardized tests after half a school year showed that the children who took vitamins outperformed the children who took candies by 175 per cent in reading and 35 per cent in spelling and by 6.7 points in IQ.

In behavior, the vitamin children were absent 12 times while the candy children were absent 58. Times tardy, 7 to 22. Leaves seat, 194 to 236. Leaves room, 19 to 36. Starts conversations, 59 to 90. Disruptions, 36 to 65. Forgetful, 5 to 16. Shows anger, 2 to 9.

Conclusion - it is very likely that many or most underachieving children are not getting enough vitamins.

8273 Main St., Kinsman, Ohio 44428.

Carolyn

A new girl came to my fourth grade class. She was blonde and pretty, nine years old, wore a very lacy dress that was a bit tattered, and her name was Carolyn. Of course a new school is a scary business for a little girl, especially with a man for the new teacher, so as usual I appointed an official friend to invite her into games, help her to get acquainted, answer questions for her and try to make the change easy.

It didn't take long to discover that no matter what we did, it was not going to be easy. She fought with everyone and spoiled every game she entered. In the room I discovered that she couldn't read, couldn't write her own name, and could not count to a hundred. She was lost no matter what the class was doing. She amused herself by whispering insults to the children around her.

I wondered if Carolyn belonged in a special education class, so I talked to the school psychologist about her, and he gave me a surprise — Carolyn's IQ was normal, probably above the average at the school. Obviously then, IQ did not assure school achievement.

One good thing — Carolyn liked me and I liked her. In the classroom I could hardly understand a word she said, but she often came back to school while the teachers were still working and I would step outside to hear her latest adventure. No trouble understanding her then. Apparently she had learned that in a classroom, the safest place is inside your shell.

There was little chance that she would learn anything in her present state of mind. If she couldn't be one of the gang on the playground, she would almost surely never catch fire in the classroom. So I insisted that the children always invite Carolyn into their games and never just let her stand and watch.

One day when the children were playing basketball Carolyn was not in the game. I asked her why, and she said that the others didn't want her in the game because she couldn't throw the ball in the basket. That's not much of an excuse for a beginner, so I went out for a look myself. It turned out that she was not missing the basket, she just couldn't throw the ball that high. I couldn't believe it and had her try again and again, it was true. She wanted to play, but she was just not strong enough. I got her into a different game.

Not long after that I was walking toward the playground with one of the other teachers and Carolyn was walking in front of us with her usual ambling gait — head down, toes in, hands curled in front of her chest. I mentioned that I had noticed that type of gait among some of the other children, all either retarded or doing very poor school-work.

I didn't know yet what the trouble was, but I did go to the principal and asked him to try to get free school lunches for Carolyn. I knew the lunches she carried were pretty dreary. It was not easy for him because of legal technicalities but he kept trying, and it was not long until Carolyn was getting a good hot lunch every day.

I also had some chewable vitamin tablets that I had taken occasionally myself. They were made of concentrated foods and honey, so they could hardly be considered medicine. At least I knew what was in them, which was more than I could say for the ice cream we gave the children at Christmas time. I put a couple of the tablets in a coin envelope and left them in her desk every evening. Well, Carolyn could forget everything under the sun - pencils, paper, books, even her shoes once — but she never forgot to slip the empty envelope into my hand as she walked past me at the door when school was out.

Several weeks later, the same teacher and I were walking along the same corridor and Carolyn came by us, and this time she was skipping.

The year ended and I sent her along to the fifth grade with the others — what else? Leave her in the fourth? She would have been just as lost in the second. At least in the fifth she would be with children of her own age and interests. Besides, she had already demonstrated that exposure to the material was not much use. It had been done over and over. Well, what about her IQ? Doesn't that tell what a child is capable of learning? Well, maybe it does, other things being equal. Apparently other things were not equal for Carolyn. So — on to the fifth grade, and wish her luck.

The Experiment

The following year I had to prepare to write a thesis to get my degree in education.

I suggested to my advisor that I conduct an experiment to see if multiple vitamin tablets would affect the learning ability of low-achieving children. He suggested that I also try to see if there is any change in behavior.

My best opportunity was the one period each day that I taught reading to a class of fourth, fifth, and sixth graders who were the "non-readers" from almost every class in the school. About half the children in the class were Caucasian, one-third Mexican-American, and a few were Afro-American, nearly typical of the school population. There were seventeen boys and five girls, ages nine through twelve.

The children were willing to participate in the experiment, so I went ahead and got the permission of the parents, the principal, the superintendent, the physician at the county health office, and the county counsel.

The school psychologist tested the children individually using the Peabody Picture Vocabulary Test. The IQ scores ranged from 66 through 120, higher than I had expected. In fact, the class averaged about 90, near the school average. In spite of this, the average achievement in reading and spelling was first grade.

If the entire class were to progress regardless of diet, some basic assumptions about the teaching-learning process would have to be agreed upon. Let's face it, there is no such thing as compulsory education. There is, however, compulsory attendance, which these children had amply demonstrated not to be the same thing. So, I could not expect much progress without the agreement of the children on my teaching methods. I proposed the following policies to the children, who agreed with them and did their best to follow them.

The first policy was kindness to each other. A child who has been the "worst" reader in his class for his entire school career almost certainly associates reading with humiliation. In some cases, his only successful school enterprise has been misbehavior. Assuming then that he must first learn to like reading, there must be no threat of any embarrassment for any error. So the basic rule was, "no hurt feelings." Don't laugh when somebody goofs.

The second policy was freedom. In learning how to read, it is the student who is the explorer and the teacher is the guide who knows his way through the phonetic jungle and is really an assistant. A student's attitude of "try and make me" cannot survive where there is freedom in the classroom because there is no opponent. Furthermore, restricting their actions would restrict my own study of their behavior. So they could go where they pleased, talk with whom they wished when they wished, sharpen a pencil, get a drink, go to the rest room, get a book from the shelves, or just wander around the room. There had to be limits, of course. I couldn't let them disrupt our own room or bother people in other rooms or have them playing games on the playground, and I did insist that they try whatever work the class was doing.

The third policy was to have no grades. Grading is always a threat, and most of the children had learned that making an effort was more perilous than refusing to try, because no teacher can detail the finer points of a person's stupidity on a nonexistent paper. I also felt that I had to show faith in these children by assuming that they wanted to learn to read, and demonstrate my sincerity by appreciating their successes and by not criticizing or grading, which is a refined form of fault-finding. Anything they learned would be no favor to me.

So there were no grades. Most papers were corrected by the children themselves by inserting the correct answers as we went along or after the work was done.

The District Library provided us with many low-vocabulary high-interest books so the children could take home books about cowboys or sailors instead of bunnies or Dick and Jane. No kid stuff. The reading center lent us a very good series of filmstrips on letter sounds.

The teacher who taught the highest reading class was very helpful and let four of her choice students come over every day to help with the work, which was far more than one teacher could do alone. They took attendance, gave individual help to the students, distributed the honey-flavored vitamin tablets to the experimental group and the candies to the control group, and kept careful and accurate records of the behavior of the students assigned to them. When they had time they worked on their own reading.

In order to keep the pressure low and the enjoyment high, we started by having art every day. The art project was for each child to design a brand of his own to be printed on his personal deck of word rummy cards using a carved eraser and colored paint.

For days they never read a word, just worked on their surfer crosses, initials or whatever for their cards. I got rather uneasy about it. Many of the children could not even recognize all the letters in the alphabet and here we were four years late, drawing pictures in reading class.

The next job was to have the children letter the words on the cards, which was really the first lesson in reading. It was very slow and difficult but they did get done. Later we had small reading circles, practiced writing their names, learned the letters, practiced lettering and writing, played the word card games, had free reading times, wrote some very simple reports and kept one-line diaries, all with much assistance from the student helpers.

Of course nothing was graded and anyone could copy from anyone or get help. All papers were correct with no reminders of errors and no one left the room wondering what the correct answer was to some question.

Progress seemed so slow that I wondered if I were making a big mistake. Even my student helpers called me on the carpet to explain why I didn't keep the children at their assignments and make them stop wasting so much time. I explained that I was only a small incident in the lifetime of each of these students and that whatever they learned in my room was very small compared to what they could learn away from my room. These students had been losers and did not like reading. The helpers had always been winners and they did like reading. If I could get these students to want to read they would not only learn in my class, but also wherever else they could the rest of their lives. I wanted to affect their lives away from school.

If they hated reading we might as well all go out and play softball. At least it would be fun. If I can't learn anything I hate, how could they? They were learning something, I hoped. Learning that reading could be rewarding, and that if they did not want to learn, the teacher was not going to force them. It was no skin off his nose.

After the students had been taking vitamins and candies for several weeks the student helpers started to keep individual records of their behavior. For ten minutes a day for twelve weeks the helpers recorded each student's attendance and what he did and where he went.

At the end of the experiment the children were tested again for IQ and for achievement by the school psychologist.

The Results

We started with twenty-two students divided into eleven matched pairs of approximately equal IQ. One group was given tablets containing vitamins A, D, B1, B2, B6, B12 and niacinimide daily and the other

TABLE (A)

COMPARISON
OF READING PROGRESS
BETWEEN A GROUP OF SUBJECTS WHO TOOK SUPPLEMENTARY VITAMINS
AND A MATCHED GROUP OF CONTROLS WHO TOOK CANDIES
DURING A PERIOD OF FIVE SCHOOL MONTHS

EXPRESSED IN SCHOOL MONTHS
ACCORDING TO WIDE RANGE ACHIEVEMENT TEST SCORES
(TEN SCHOOL MONTHS EQUAL ONE SCHOOL YEAR)

	VITAMINS				CANDIES			
Subject	**Pre**	**Post**	**Gain**	**Control**	**Pre**		**Post**	***Gi***
1. Isaiah	**27**	**30**	**3**	**1. Charles**	**33**		**31**	**-2**
2. Frank	**21**	**25**	**4**	**2. Robert**	**18**		**20**	**2**
3. Tim	**16**	**23**	**7**	**3. Marvin**	**21**		**27**	**6**
4. Mark	**19**	**26**	**7**	**4. Ronald**	**17**		**18**	**1**
5. James	**19**	**21**	**2**	**5. Sam**	**18**		**18**	**0**
6. Ruth	**22**	**28**	**6**	**6. Alfred**	**16**		**19**	**3**
7. Amos	**21**	**24**	**3**	**7. Mack**	___	-		**-**
8. Linda	___	___	___	**8. Glen**	___	___		**-**
9. Joe	**10**	**13**	**3**	**9. Irene**	**19**		**22**	**3**
10. Geraldine	**10**	**13**	**3**	**10. Carol**	___	___		**-**
11. Herman	**19**	**25**	**6**	**11. George**	**12**		**12**	**0**
	Average Subject Scores				**Average Control Scores**			
	Pre:	**18.4 months**			**Pre:**			**19.3 months**
	Post:	**22.8 months**			**Post:**			**20.9 months**
	Gain:	**4.4 months**			**Gain:**			**1.6 months**

Note: With the figures for Linda, Mack, Glen, and Carol missing, there is probably a small change in the average IQ of each group.

group was given candies. Because of absences and because a few children arrived and some left, it was not possible to have all the figures for all the children.

The experiment last five school months, the second and third of four grading periods, or half the school year.

In reading, the ten children in the vitamin group gained an average of 4.4 months, 175 percent more than the eight children in the candy group which gained 1.6 months. Before the experiment started, the average gain of the vitamin group had been two months for each five months of school, so the vitamin group showed a 120 percent gain over their former rate of progress in reading, more than twice as fast. The candy group dropped from 1.8 to 1.6 months, a decline of 11 percent.

The slowest child in the vitamin group gained two months and the fastest gained seven. The slowest child in the candy group lost two months and the fastest gained three, except for one boy who had been partially deaf and had regained his hearing during the experiment. He gained six months.

In spelling, the ten children in the vitamin group gained 6.9 months, 35 percent more than the eight children in the candy group, which gained 5.1 months. Before the experiment started, the average gain of the vitamin group had been 1.7 months for each five months of school, so the vitamin group showed a 306 percent gain over their former rate of progress in spelling. The candy group gained 5.1 months, an increase of 240 percent over their former rate of 1.5 months.

TABLE (B)

COMPARISON OF SPELLING PROGRESS
BETWEEN A GROUP OF SUBJECTS WHO TOOK SUPPLEMENTARY VITAMINS
AND A MATCHED GROUP OF CONTROLS WHO TOOK CANDIES
DURING A PERIOD OF FIVE SCHOOL MONTHS

EXPRESSED IN SCHOOL MONTHS
ACCORDING TO WIDE RANGE ACHIEVEMENT TEST SCORES
(TEN SCHOOL MONTHS EQUAL ONE SCHOOL YEAR)

Subject 1. Isaiah	Pre 22	Post 3	Gain 25	Control 1. Charles	Pre 22	Post	Gain 27	5
2. Frank	20	24	4	2. Robert	15	23	8	
3. Tim	15	23	8	3. Marvin	15	20	5	
4. Mark	19	26	7	4. Ronald	13	21.	8	
5. James	22	24	2	5. Sam	13	19	6	
6. Ruth	23	28	5	6. Alfred	17	18	1	
7. Amos	16	27	11	7. Mack	—	—		–
8. Linda	—	—	—	8. Glen	—	–		–
9. Joe	1	10	9	9. Irene	19	26	7	
10. Geraldine	5	12	7	10. Carol	–	—		–
11. Herman	13	26	13	11. George	12	13	1	

Average Si	Jbject Scor—	Average Control Scores	
Pre:	15.6 months	Pre:	15.8 months
Post:	22.5 months	Post:	20.9 months
Gain:	6.9 months	Gain:	5.1 months

Note: With the figures for Linda, Mack, Glen, and Carol missing, there is probably a smafl change in the average IQ of each group.

The slowest child in the vitamin group gained two months and the fastest gained thirteen. The slowest child in the candy group gained one month and the fastest gained eight.

In IQ, the eleven children in the vitamin group gained an average of 4.82 points and the eight children in the candy group lost an average of 1.88 points, a difference of 6.70 points. Two of the children in the vitamin group lost four points each, one made no change, and all the rest gained, one as much as twenty points. In the candy group only one showed a gain, eleven points. He was the one who had regained his hearing.

TABLE (C)

COMPARISON OF CHANGES IN VOCABULARY IQ SCORES
BETWEEN A GROUP OF SUBJECTS WHO TOOK SUPPLEMENTARY VITAMINS
AND A MATCHED GROUP OF CONTROLS WHO TOOK CANDIES
DURING A PERIOD OF FIVE SCHOOL MONTHS

Vitamins						Candies		
Subject	Pre	Post	Gain	Control	Pre	Post	Gain	
1. Isaiah	114	115	1	1. Charles	120	120		0
2. Frank	104	116	12	2. Robert	111	105		-6
3. Tim'	95	91	-*A*	3. Marvin	98	109		11
4. Mark	91	105	14	4. Ronald	92	89		-3
5. James	90	86	-4	5. Sam	89	86		-3
6. Ruth	86	88	2	6. Alfred	84	76		-8
7. Amos	84	90	6	7. Mack	—	—		—
8. Linda	83	87	4	8. Glen	-	-		—
9. Joe	77	97	20	9. Irene	76	70		-6
10. Geraldine	76	76	0	10. Carol	-			—
11. Herman	66	68	2	11. George	67	67		0
	Average Pre Score:	87.82			Average Pre Score:	92.13		
	Average Post Score:	92.64			Average Post Score:	90.25		
	Average Change:	: Pius 4.82			Average Change:	Minus 1.88		

Differential in Vocabulary IQ Scores: 4.82 plus 1.88 equals 6.70

Now for behavior. The eight children in the vitamin group had twelve absences while the eight children of equal IQ in the candy group had fifty-eight. Times tardy, 7 to 22. Leaves seat, 194 to 236. Leaves the room, 19 to 36. Starts conversations, 59 to 90. Disrupts group or class, 36 to 65. Shows forgetfulness, 5 to 16. Shows anger, 2 to 9.

Of course this only tells what happened and does not say what is "good" or "bad", but any teacher could decide in a flash which group would be easier to teach.

TABLE (D)

COMPILED DATA ON COMPARISON OF BEHAVIOR
BETWEEN A GROUP OF EIGHT SUBJECTS WHO TOOK SUPPLEMENTARY VITAMINS
AND A MATCHED GROUP OF EIGHT CONTROLS WHO TOOK CANDIES
BY NUMBER OF OCCURRENCES OF DESCRIBED BEHAVIOR
DURING 60 DAILY 10-MINUTE OBSERVATIONS

BEHAVIOR	Subjects	Controls
Absences	12	58
Times Tardy	7	22
Leaves Seat	194	236
Leaves Room	19	36
Shows Initiative	62	56
Talks	59	90
Disrupts Group or Class	36	65
Shows Sense of Humor	26	28
Shows Forgetfulness	5	16
Shows Anger	2	9

What Does It Mean? There is no way that this experiment could prove any more than what these vitamins did for these children, but the inference is inescapable that these children represent thousands of other slow learning easily distracted "misbehaving" children across the country, and that supplementary vitamins would likely work wonders for them. Maybe they would help children who are already doing well.

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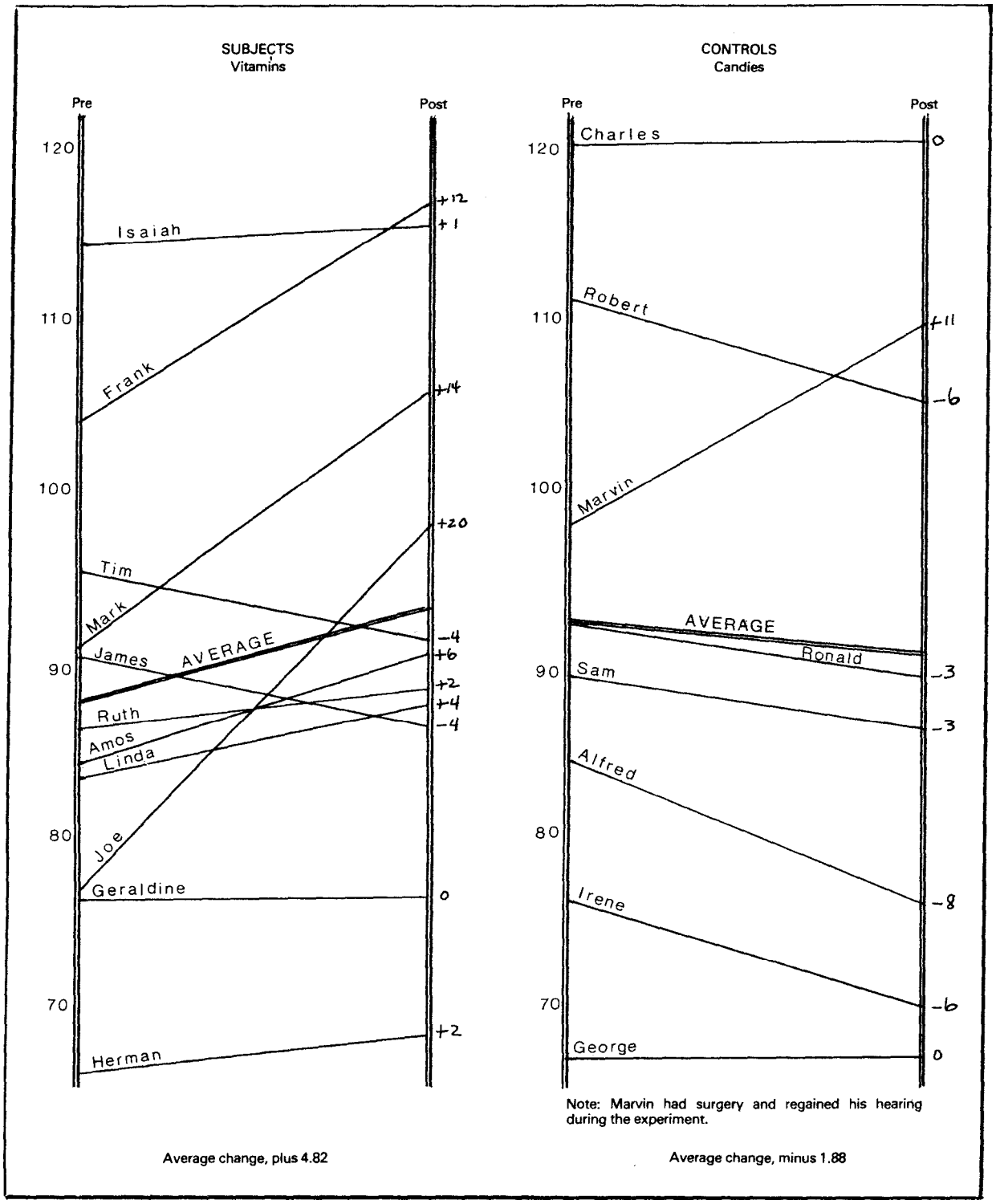
CHANGES IN VOCABULARY IQ SCORES
BETWEEN SUBJECTS WHO TOOK SUPPLEMENTARY VITAMINS
AND CONTROLS WHO TOOK CANDIES
DURING A PERIOD OF FIVE SCHOOL MONTHS



Maybe supplementary vitamins would help in other areas like math, or music, or sports. Maybe they would improve behavior away from the classroom. Maybe supplementary calcium or proteins would improve learning ability. There has been little reliable classroom research on these questions.

One thing is sure supplementary vitamins that make an improvement are supplementing a deficient diet. What is really needed is better food. These children are in very real trouble, today. When they are grown, vitamins are not likely to be of any help in learning what they missed years ago.

Apparently most of the dollars spent on the effort to educate these children are wasted for lack of pennies spent for vitamins - but the loss of the money is trivial compared with the loss of self-respect, well-being, competence and dignity of these children. They do not say, "I can't read," they say, "I'm no good -1 can't read."

We are losing more than money.