

# CONCEPT ATTAINMENT

## Introductory Comments

The teaching strategy of Concept Attainment is based upon the work of Jerome Bruner and his colleagues Jacqueline Goodnow and George Austin. Their research, published in the book A Study of Thinking, focused on two of the most basic human cognitive acts--categorizing and conceptualizing. Concept Attainment helps students learn a concept by asking them to compare and contrast examples that do not contain those attributes.

Concept Attainment is an effective method for teaching concepts in a number of different areas.

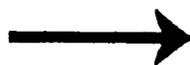
## Steps

1. The instructor explains to students the process of Concept Attainment.
2. The instructor presents labeled examples of the concept (positive examples and negative examples).
3. Students compare attributes in positive and negative examples.
4. Students generate and test hypotheses.
5. Students identify the concept (confirmed by instructor, if correct).
6. Students generate additional examples of the concept.
7. Students analyze their thinking patterns and strategies.

# DO YOU REMEMBER??

- 1) Decide to remember.
- 2) Organize the information so it has meaning to you.
- 3) Rehearse it, using modalities that you prefer.
- 4) Practice in different contexts and in different ways.
- 5) Teach the new information to someone else.

**Short-Term  
Memory**



**Long-Term  
Memory**

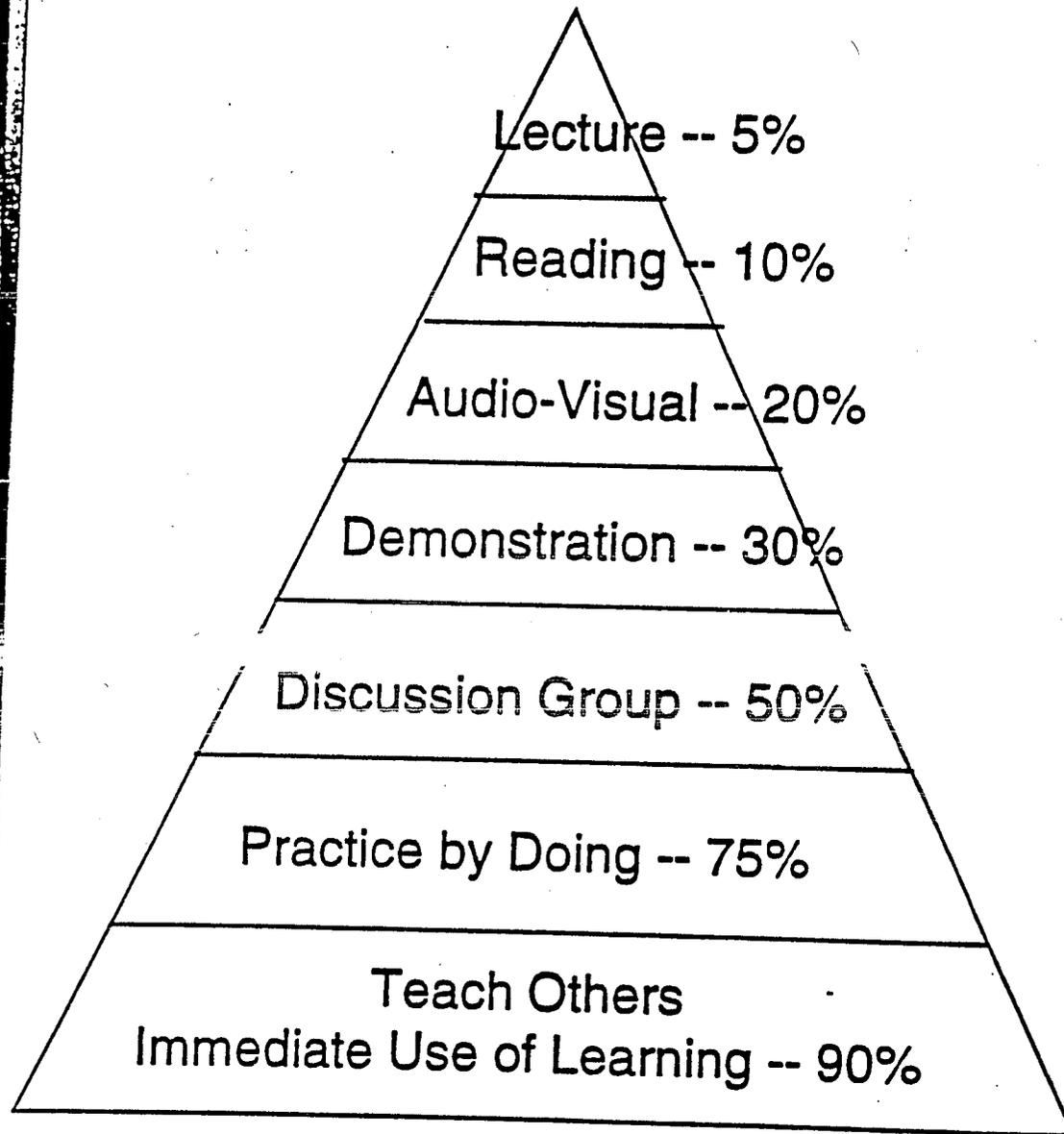
Pam Robbins

# TROUBLE REMEMBERING?

In order for remembering to occur, information must be retrieved from the long-term memory . . . However, sometimes there are obstacles to the retrieval process:

- \* Clogging at the synapse
- \* Deterioration of the neural pathways involved
- \* Stress!

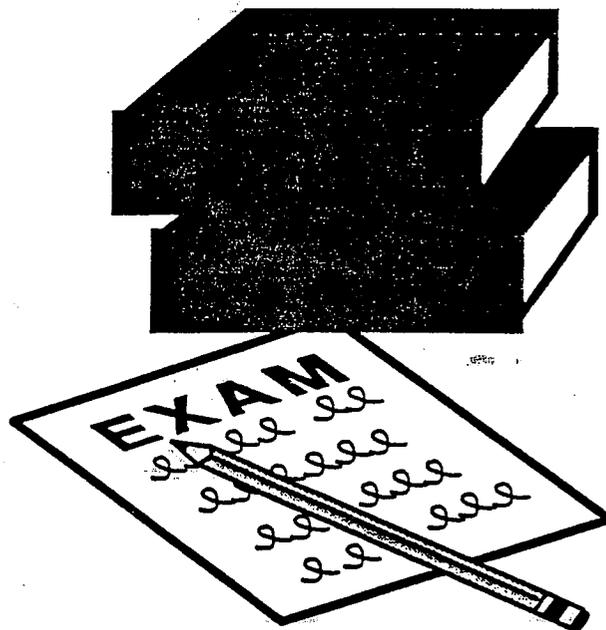
# Average Retention Rates



National Training Laboratories  
Bethel, Maine

## What are some of the problems we're facing in schools today?

From Howard Gardner ...  
"Even students who exhibit all the overt signs of success typically do not display an adequate understanding of the materials and concepts with which they have been working."



From David Perkins ...

- Overwhelming emphasis on factual knowledge
- Tests focus on facts and procedures
- Textbooks contain little "language of thinking"
- Emphasis on "coverage"

David Perkins, in his book Smart Schools (1991), addresses the concept of "fragile knowledge".

- Missing -- Exposed to, but forgotten
- Inert -- Have but don't know when to use
- Naive -- Misconceptions based on intuitive understanding
- Ritual -- How to play "the school game"

How can we use what we know about the brain to address these challenges?

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# RESEARCH ON THE TRANSFER OF TRAINING

In 1981, Bruce Joyce and Beverly Showers reported on an analysis of 200 staff development studies. They found that in any given year the average teacher in the United States participates in only about three days of inservice, rarely more than one day at a time, and usually in brief workshops that feature "inspiring" speeches and demonstrations of discrete skills. These "one-shot" workshops seldom produce meaningful change in teacher behaviors. Even in inservice sessions which contained a clear explanation of the theory, demonstrations or modeling of the theory, and practice of the new skills with feedback, the percentage of teachers who transferred the new skills into their classrooms was small. The following chart displays their findings:

Training Components	Skills Attained	Transfer of Skills
Theory	10 to 20%	5 to 10%
+ Demonstration	30 to 35%	5 to 10%
+ Practice	60 to 70%	5 to 10%
+ Feedback	70 to 80%	10 to 20%
+ Coaching	80 to 90%	80 to 90%

## So what are the implications?

Here's what we've learned ...

1. **Construction of Meaning -- Successful learning requires the learners to actively construct meaning, to make their own sense of the data.**
2. **Connection to Existing Knowledge -- The prior knowledge that students bring with them exerts a tremendous influence on how they interpret new learnings.**
3. **Elaboration Beyond Content -- Facts aren't enough. Students must learn skills and concepts in enough depth to be able to apply them in other settings.**
4. **Interaction with a Personally Meaningful Environment -- In order to learn new information, students must be able to relate it to their lives in a meaningful way.**

**What does it look like  
in the classroom?**

# The Teacher's Role



1. We establish a "learning friendly" environment.
2. We find out what "existing files" each child already has. (ASSESSMENT)
3. We cause disequilibrium. (No problem!) Cause curiosity/a need to file -- not trash!
4. We help students organize and reorganize their files for themselves. (QUESTIONING STRATEGIES)
5. We provide materials and experiences which allow students to find and work with their new files.

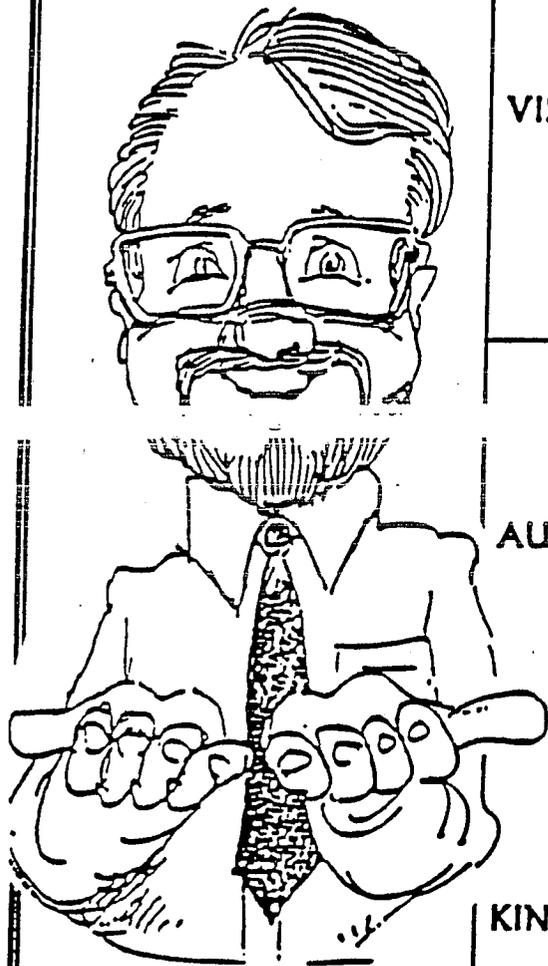
**NOTE:** The word files is synonymous with thinking in any of the above statements.

Ruth Romer  
Applying Piaget in the Classroom  
1993

# Congruent Communication

## Verbals = Non-verbals

### (Gesture, Tone, Tempo)



GESTURE	VOICE	VERBS
VISUAL	<ul style="list-style-type: none"> <li>• rapid pace</li> <li>• high pitch</li> <li>• rapid breathing</li> </ul>	look image perspective scope vision view picture see notice examine outlook
AUDITORY	<ul style="list-style-type: none"> <li>• rhythmic</li> <li>• mid-range pitch</li> <li>• even-paced breathing</li> </ul>	hear discuss inquire report remark speak talk mention
KINESTHETIC	<ul style="list-style-type: none"> <li>• slow pace</li> <li>• low pitch</li> <li>• pauses</li> <li>• slow, deep breathing</li> </ul>	feel emotion intuition grasp hold hunch pressure stress tension

Suzanne Bailey

## VISUAL, AUDITORY, AND KINESTHETIC

# ACCESSING CUES

When evaluating an individual's pattern of accessing cues, changes in the following bodily responses may be apparent:

## General Tendencies

	Visual	Auditory	Kinesthetic
Breathing Rate	Tends to be higher in chest; more shallow; more rapid.	Tends to be more in mid-region; ie diaphragmatic.	Tends to be deeper, more abdominal breathing; slower.
Postural Shift	Shoulders tend to be held higher and tenser.	Shoulders tend to be in a position between Visual and Kinesthetic.	Shoulders tend to be lower and more relaxed.
Skin Color	Tends to be paler.	In between Visual and Kinesthetic.	Tends to be redder, pinker.
Voice Tone/ Tempo	Pitch tends to be higher; rate faster.	In between Visual and Kinesthetic.	Pitch tends to be lower; rate slower.
Muscle Tone	Tends to be more tense.	In between Visual and Kinesthetic.	Tends to be more relaxed.
Hand/Arm Movement	Tends to be higher.	In between Visual and Kinesthetic.	Tends to be lower.
Eye Movement	See Chart Below		

Right

Left

Visual  
Constructed (Vc)

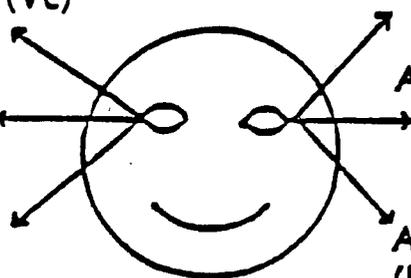
Visual Remembered (VR)

Auditory  
Constructed (Ac)

Auditory Remembered (AR)

Kinesthetic  
(K)

Auditory Digital  
(Internal Dialog)  
(AD)



## AUDITORY PHRASES

- Do you hear what I'm saying?
- What do you say?
- In other words ...
- How does this sound?
- The tone of your conversation is ...
- Everything just clicked.
- Tell me ...
- Listen to me ...
- It sounds as though ...
- I can tune in to that.
- You are tuning me out.
- How our conversation is harmonious.
- Let me reiterate ...
- What you said rang a bell.
- There's a lot of talk about ...
- I'll call you later.
- It was music to my ears.
- Listen to the voice of experience.
- I note that ...
- It's no laughing matter.
- I don't like the sound of that.
- That didn't ring true.
- That was a poorly orchestrated plan.
- I'm going to have to rattle a few chains.

## VISUAL PHRASES

- Do you see what I mean?
- Let me clarify.
- It's crystal clear to me.
- What is your view?
- My perspective is ...
- Let's take another look.
- The future looks bright.
- I look forward to seeing you.
- Show me what you mean.
- Now I see things in a different light.
- I envision the future as ...
- I have visions of dire consequences.
- What you say is a reflection of ...
- Let's focus ...
- Picture, if you will ...
- It appears that ...
- It looks as though ...
- It was like mirror image of ...
- I want to eyeball the scene.
- It happened in the twinkling of an eye.
- See you later.
- Do you get the picture?
- It was out of sight.

## KINESTHETIC PHRASES

- How do you feel about that?
- I want to touch bases with you.
- Feel free to contact me.
- Get a grip on yourself.
- It was a touching thought.
- How do you want to handle this?
- You are a warm (cold) person.
- How does that grab you?
- It gave me chills.
- I can't put my finger on it.
- You're running away from the problem.
- Let's kick around this idea.
- It blows my mind.
- Hop to it .. jump into action.
- It's a heavy thought.
- I was moved to tears.
- Get a move on ...
- Let me thrown out this idea.
- I had a sinking feeling.
- I have fallen down on the job.
- Don't let me down.
- I feel stuck.
- He is deep in thought.
- The going will be rough.
- You are clinging to the past.
- That person has a sharp tongue.
- Turn your attention to ...
- I'd like to bounce this idea off of you.
- I didn't get a fair shake.
- Just hang on a little longer.
- I really was carried away with ...
- Suddenly everything fit.
- Put the lid on your temper
- He has a closed (open) mind.
- It breaks my heart.
- I was tom apart ...
- It tears me up ...
- It was a moving experience.
- It was a touching experience.
- It was a hard decision.
- Let's pull these ideas together.
- do you catch the point?
- What's the catch?
- You are treading on thin ice.
- Things are moving along quickly.
- We are approaching a break through.
- This is how it strikes me.
- Run that by me gain.
- I think that covers the subject.
- Let's pick up on this idea where we left off.
- I'm really drawn to the idea.
- Let's get down to the nitty gritty.
- Why don't you take a stand on that?
- That joke cracked me up.
- I was on pins and needles.
- You've really got your hands full.
- I'm itching to get involved in that project.
- You're jumping to conclusions.
- Don't let it slide.
- Chain of command.
- Turn of events.
- Gut level issues.

# LANGUAGE INDICATORS OF MODALITY PREFERENCES

As you listen to a person talk, you may discover there are times when a majority of his/her predicates (descriptive words and phrases -- primarily verbs, adverbs, and adjectives) are from one of the modality or representational systems listed below. This person is choosing, usually at an unconscious level, to isolate one system from his/her ongoing stream of representational system experiences. This is an indicator for you of how this person is best understanding about his/her experiences and how you can best communicate.

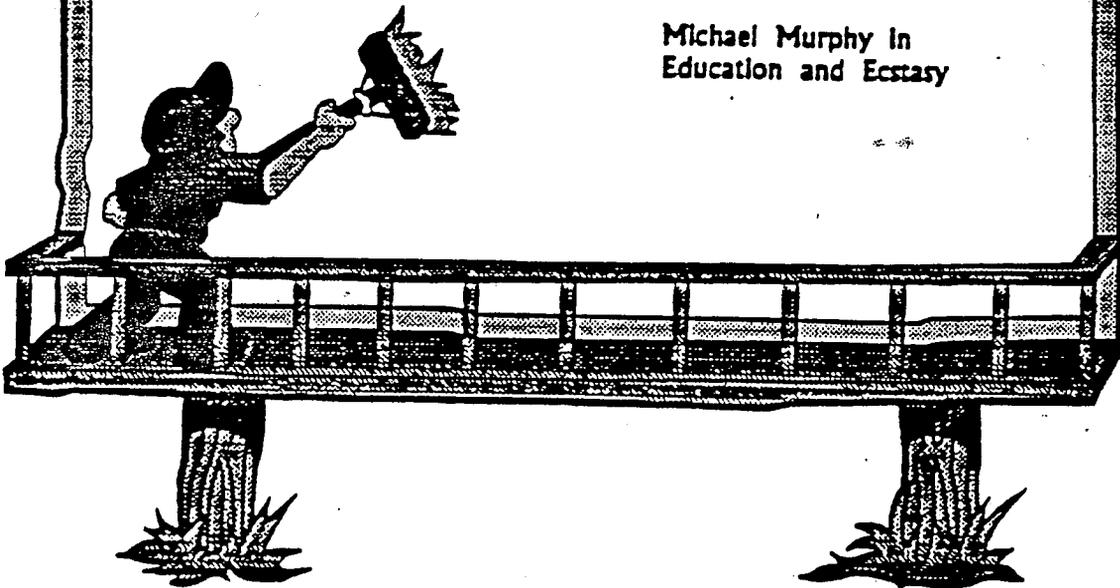
Visual	Auditory	Kinesthetic
see observe clear perspective visualize hazy murky light lighten up look watch viewpoint point of view eyeball fuzzy vivid transparent picture	hear speak verbalize talk clear as a bell resonate harmonious loud clear sing unheard of answer drum it in listen tell myself told say tune in tone volume dissonant high pitched	feel handle in touch firm on the level tense heavy lightweight grasp energetic gut feeling foundation relaxed weighty come to grips raise an issue
see the light image insight purple look something up focus mirror foreshadow red	sing song unheard of answer drum it in ring my chimes well said so to speak meticulous	deep on it touchy pushy itchy shoulder the soft touch hurt irrational neck foot the bill blame let go
Olfactory	Gustatory	Nonspecific
smell odor scent aroma fragrant rotten fresh	taste tasteless tasteful salivate mouthwatering tip of my tongue delicious sweet lip smacker spicy bitter pill to swallow bit off more than s/he could chew	think experience know - intellectualize understand perceive respond accurate solution resolve strategy logical



Different cultures  
choose different possibilities  
to reinforce.

It is clear that our culture has  
chosen, by and large, to  
educate and reinforce one  
aspect of human potential,  
the cognitive/verbal to  
the detriment of  
many others.

Michael Murphy in  
Education and Ecstasy



Sorgen and Wolfe, 1993

# Seven Types of Intelligence

"It is of the utmost importance that we recognize and nurture all of the varied human intelligences, and all of the combinations of intelligences. We are all so different largely because we all have different combinations of intelligences. If we recognize this, I think we will have at least a better chance of dealing appropriately with the many problems that we face in the world."

Howard Gardner (1987)

**Linguistic** -- reading, writing, speaking, listening

**Logical/Mathematical** -- working with numbers and abstract patterns

**Visual/Spatial** -- working with images, mind mapping, visualizing, drawing

**Musical** -- rhythm, melody, patterned sound, song, rap, dance

**Bodily/Kinesthetic** -- processing information through touch, movement, dramatics

**Interpersonal** -- sharing, cooperating, interviewing, relating

**Intrapersonal** -- working alone, self-paced instruction, individualized projects

Frames of Mind, Howard Gardner, 1985

In Their Own Way, Thomas Armstrong, 1987

See also Educational Leadership, October 1992

# Assessing How Your Students Learn

This checklist, adopted with permission from Multiple Intelligences In The Classroom by Thomas Armstrong (Association for Supervision and Curriculum Development, 1994) can help you take an in-depth look at which intelligences a student uses most. Fill out the checklist for two or three students you have difficulty reaching or for each student in your class. Check each statement that describes the student, then review them together to see which intelligences are the student's strongest.



## Word Smart

- \_\_\_ tells tall tales, jokes, and stories
- \_\_\_ has a good memory
- \_\_\_ enjoys word games
- \_\_\_ enjoys reading and writing
- \_\_\_ has a good vocabulary for age
- \_\_\_ has good verbal communication



## Picture Smart

- \_\_\_ enjoys logic puzzles or brain teasers
- \_\_\_ uses higher-order thinking skills
- \_\_\_ reports seeing clear mental pictures
- \_\_\_ reads maps, charts, and diagrams easily
- \_\_\_ daydreams more than peers
- \_\_\_ enjoys art activities
- \_\_\_ likes visual presentations
- \_\_\_ enjoys puzzles and mazes
- \_\_\_ understands more from pictures than words while reading
- \_\_\_ doodles on paper



## Body Smart

- \_\_\_ excels in one or more sports
- \_\_\_ moves, twitches, hops, or jiggles while seated for a long time
- \_\_\_ enjoys taking things apart and putting them back together
- \_\_\_ handles new objects
- \_\_\_ enjoys running, jumping or wrestling
- \_\_\_ expresses herself dramatically
- \_\_\_ enjoys clay and finger painting



## Music Smart

- \_\_\_ recognizes off-key music
- \_\_\_ remembers melodies



## People Smart

- \_\_\_ plays a musical instrument or sings in a choir
- \_\_\_ speaks or moves rhythmically
- \_\_\_ hops rhythmically as he or she works
- \_\_\_ is sensitive to environmental noises
- \_\_\_ responds favorably to music
- \_\_\_ sings songs that he has learned outside of the classroom
- \_\_\_ enjoys socializing with peers
- \_\_\_ acts as a natural leader
- \_\_\_ gives advice to friends who have problems



## Self Smart

- \_\_\_ seems to be street-smart
- \_\_\_ belongs to clubs, committees, or other organizations
- \_\_\_ likes to play games with other kids
- \_\_\_ has one or more close friends
- \_\_\_ shows concern for others
- \_\_\_ displays a sense of independence
- \_\_\_ has a realistic sense of her strengths
- \_\_\_ has a good sense of self-direction
- \_\_\_ prefers working alone to working with others
- \_\_\_ learns from his failures and successes
- \_\_\_ has high self-esteem



## Number Smart

- \_\_\_ asks questions about how things work
- \_\_\_ quickly does mental math
- \_\_\_ enjoys math activities
- \_\_\_ enjoys strategy games

# MULTIPLE INTELLIGENCES MODEL

## CHECKLIST

### LINGUISTIC INTELLIGENCE

- like to write, read and listen
- like to tell jokes and stories
- have a good memory for names, places, dates, or trivia
- enjoy reading books and writing stories
- spell words accurately, easily and with accuracy
- have well developed vocabulary and use language fluently
- like doing crossword puzzles or playing word games

### MUSICAL INTELLIGENCE

- sensitive to a variety of sounds in the environment
- play a musical instrument or enjoy music
- remember melodies of songs
- tell when a musical note is off-key
- prefer to have music on when studying or working
- collect recordings
- enjoy singing
- keep time to music
- has a sense of rhythm

### LOGICAL MATHEMATICAL INTELLIGENCE

- explore patterns, categories and relationships
- compute arithmetic problems quickly
- enjoy mathematics and using computers
- able to group and order data, and then analyze, interpret and make predictions
- reason things out logically to solve problems
- play chess, checkers, or strategy games and win
- devise experiments to test out things not easily understood
- enjoy logic puzzles
- sees cause and effect easily

### BODILY-KINESTHETIC INTELLIGENCE

- learns best by moving around, touching, or acting things out
- process knowledge through bodily sensations
- move, twitch, tap, or fidget while sitting
- engage in physical activities or sports
- perform fine and gross motor skills effectively
- like to touch or be touched when talking with people
- skilled at handicrafts - woodworking, sewing, sculpting, etc.
- enjoy using manipulatives and other hand-on learning

### INTRAPERSONAL INTELLIGENCE

- strengths and weaknesses
- display a sense of independence and is self-directed
- react with strong opinions when controversial topics are being discussed
- prefer own private inner world
- like to be alone to pursue some personal interest, hobby, or project
- have a deep sense of self-confidence
- uniqueness in style of dress, behaviour, or general attitude
- self-motivated to do well on independent study projects
- intuitive ability

### INTERPERSONAL INTELLIGENCE

- enjoy being around people
- have many friends
- socialize a lot at school, work, or home
- organize, communicate and sometimes manipulate
- learn best by relating and cooperating
- enjoy group activities
- serve as "mediator" when disputes arise
- have empathy for the feelings of others
- can "read" social situations accurately

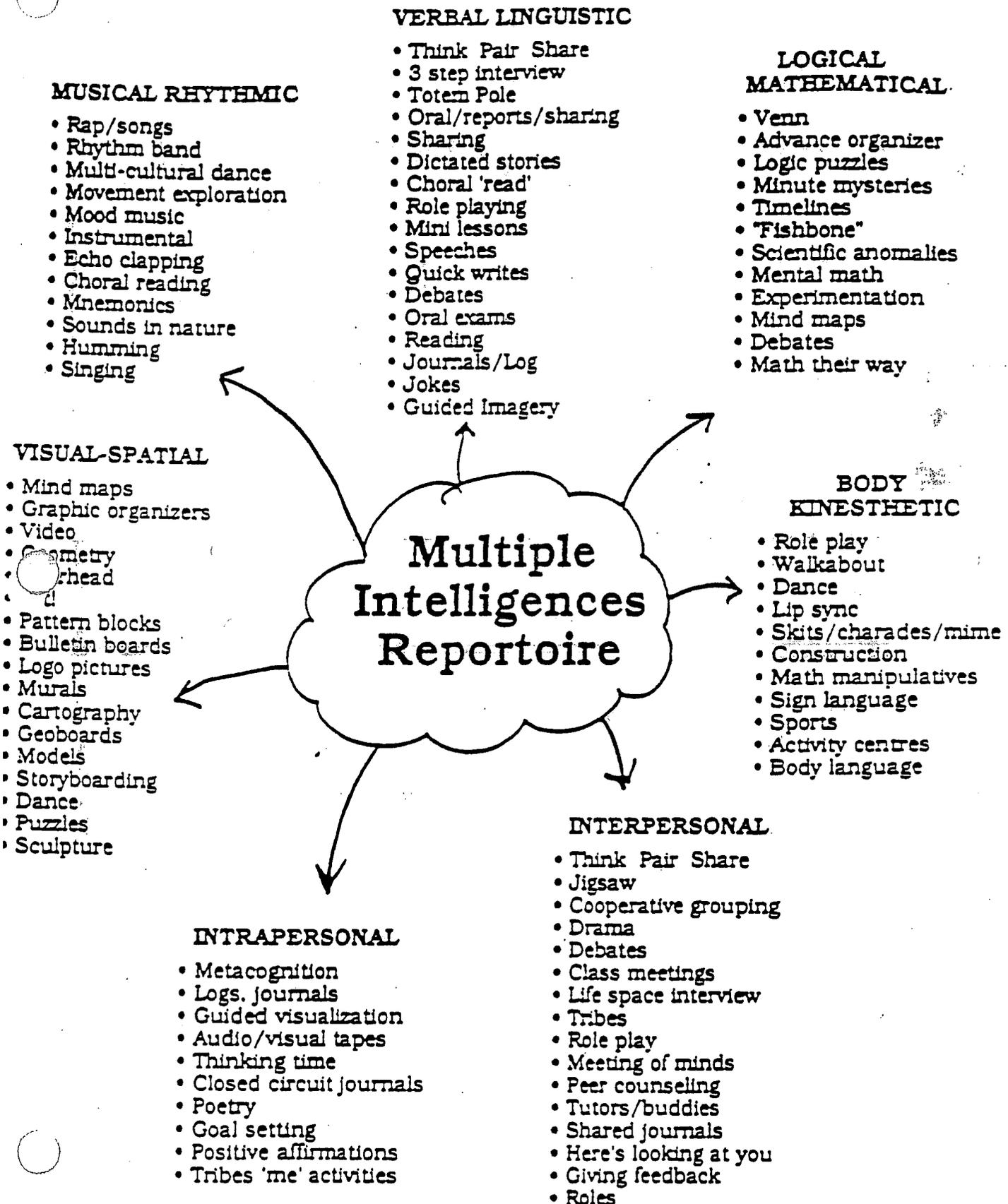
### SPATIAL INTELLIGENCE

- think in images and pictures
- like to draw, paint, sculpt, and participate in art activities
- report clear visual images when thinking about something
- easily read maps, charts, and diagrams
- draw accurate representations of people or things
- like to see movies, slides, or photographs
- enjoy doing jigsaw puzzles or mazes

### MULTIPLE INTELLIGENCE INVENTORY

	Least like me	Most like me
Linguistic	-----	-----
Logical-Mathematical	-----	-----
Intrapersonal (self)	-----	-----
Spatial	-----	-----
Musical	-----	-----
Bodily-Kinesthetic	-----	-----
Interpersonal (others)	-----	-----

# SUGGESTIONS FOR USING THE 7 INTELLIGENCES



## Collaboratively Designing a Multiple Intelligences Lesson

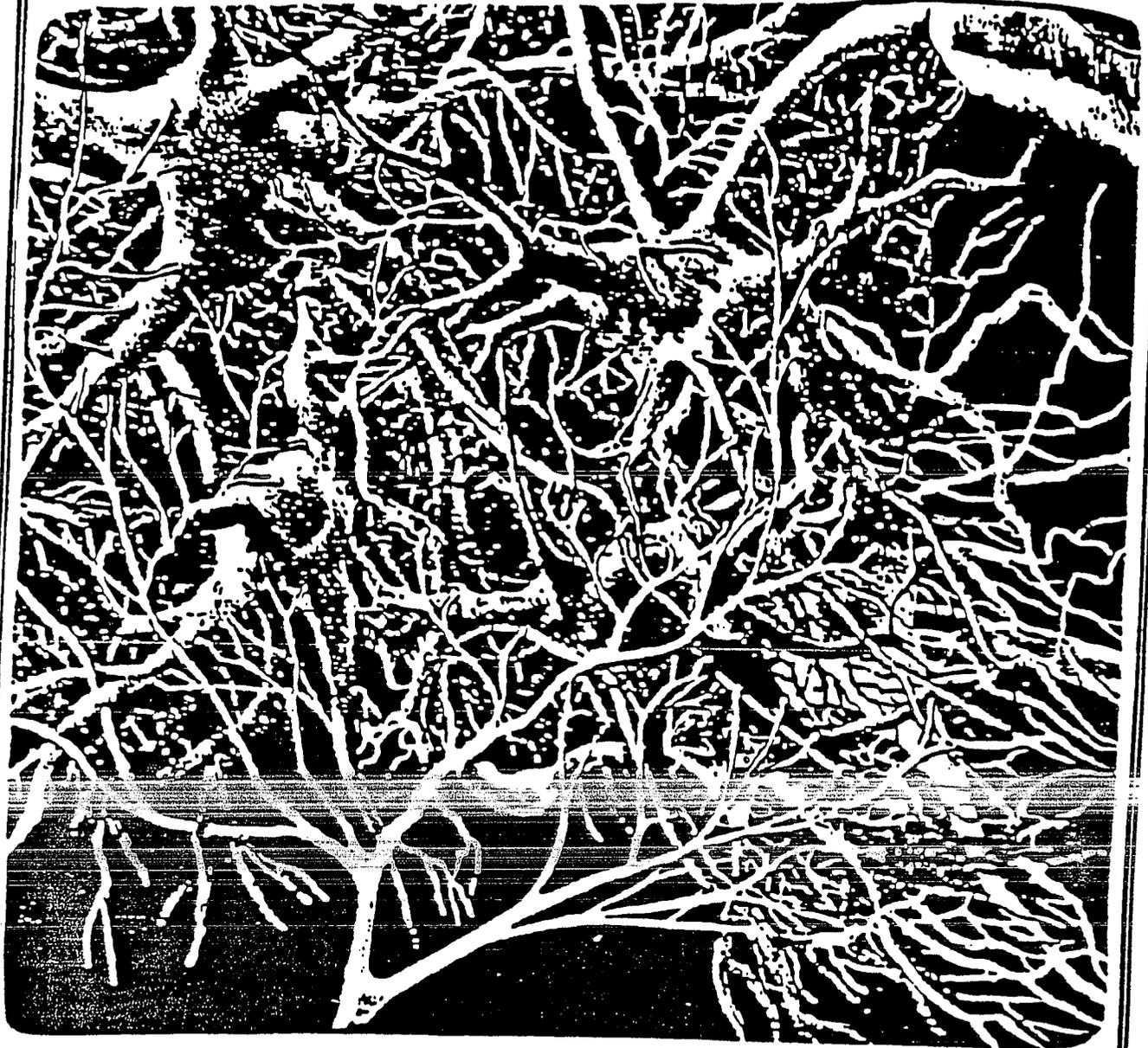
- ☛ Form a group of four colleagues.
- ☛ Select a lesson topic.
- ☛ Decide how you'll incorporate the multiple intelligences. Cite specific activities, materials needed, etc.
- ☛ Try your lesson out -- in the classroom, or with a group of colleagues.
- ☛ Revise as necessary.
- ☛ Jot down your reflections.
  - ♥ What did you observe about student learning?
  - ♥ What did you learn?

**Elaboration**

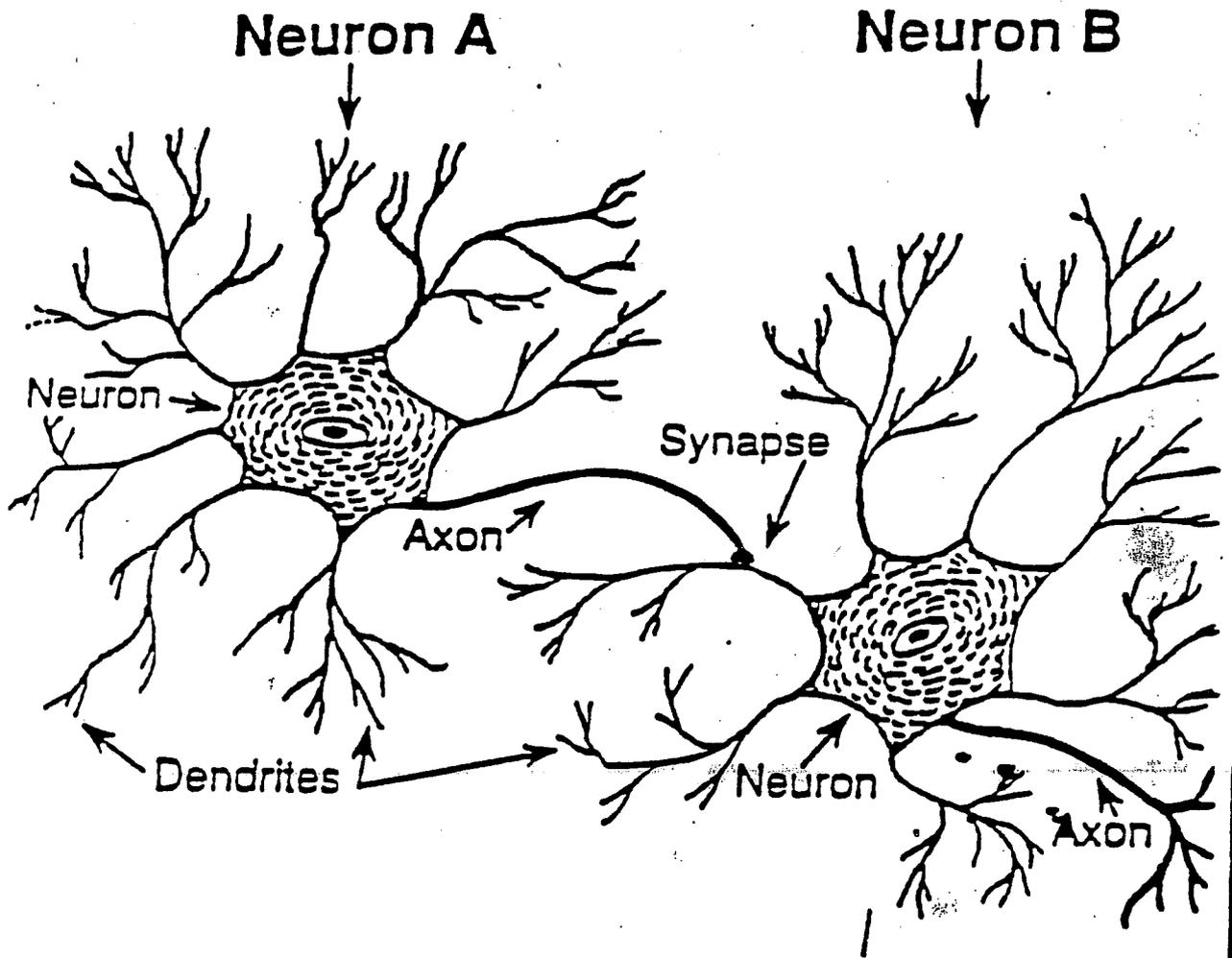
**Long-Term  
Memory**

**Retrieval**





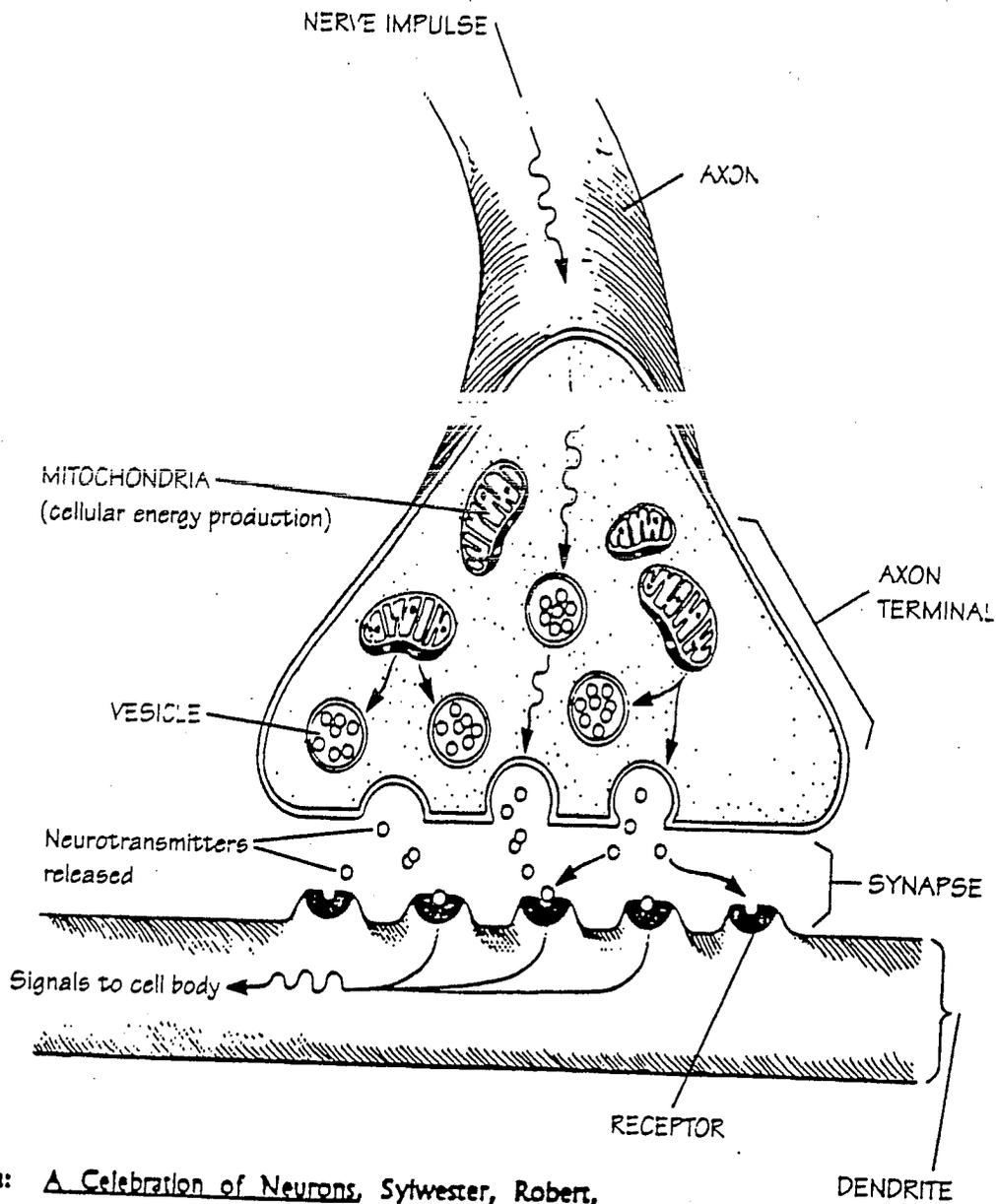
THIS IS WHAT IT LOOKS LIKE IN  
THE NEOCORTEX OF YOUR  
BRAIN!



All information processing in the brain consists of neurons "talking" to one another.

Pat Wolfe

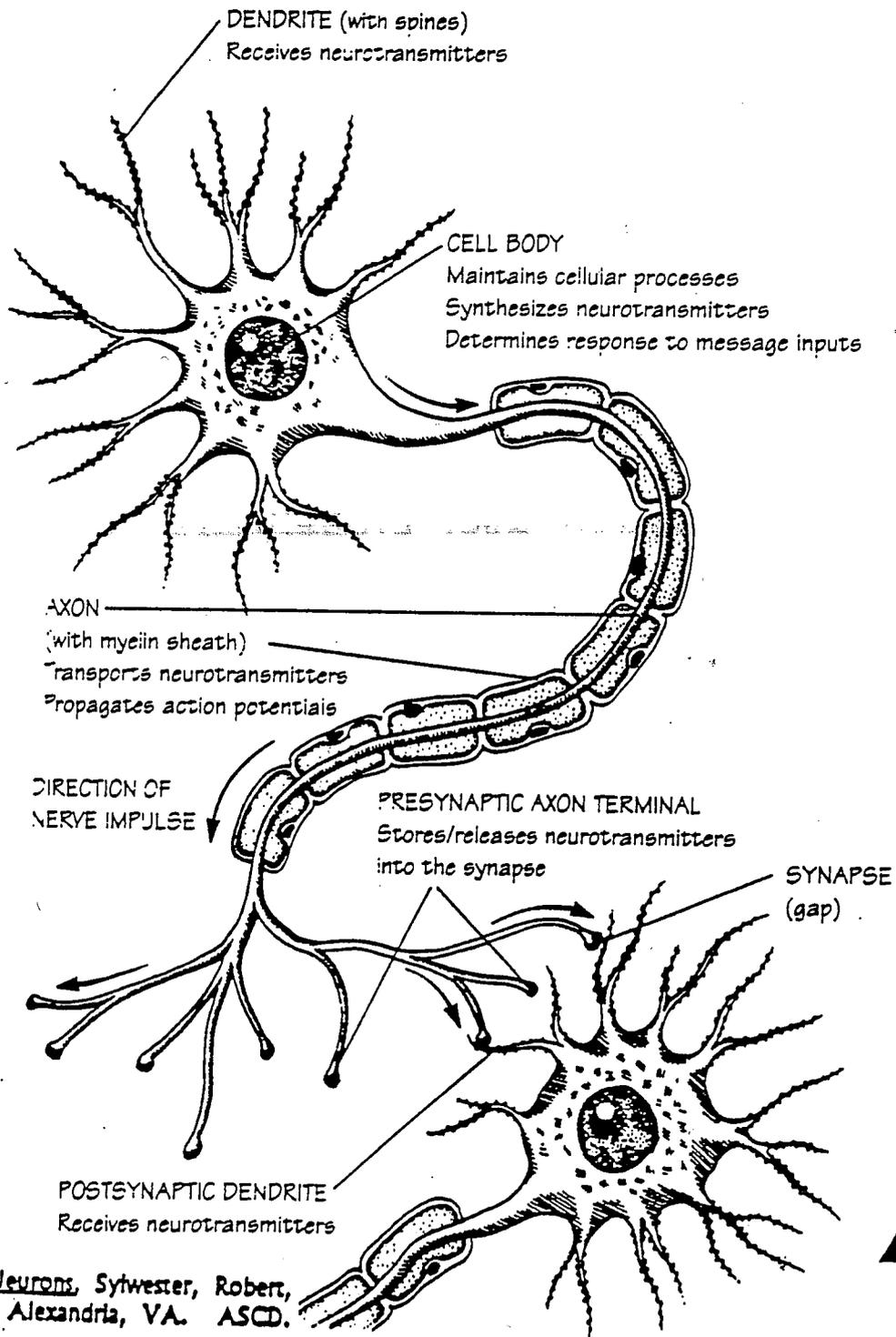
FIGURE 2.3  
SYNAPTIC AREA



from: A Celebration of Neurons, Sylwester, Robert,  
(1995) Alexandria, VA. ASCD.

How Our Brain Organizes Itself

FIGURE 2.1  
FUNCTIONAL MODEL OF A NEURON



from: A Celebration of Neurons, Sylwester, Robert,  
(1995) Alexandria, VA. ASCD.

# Neural Plasticity

Environment changes the brain!

Enriched environment -- increased cell weight -- increased branching of dendrites.

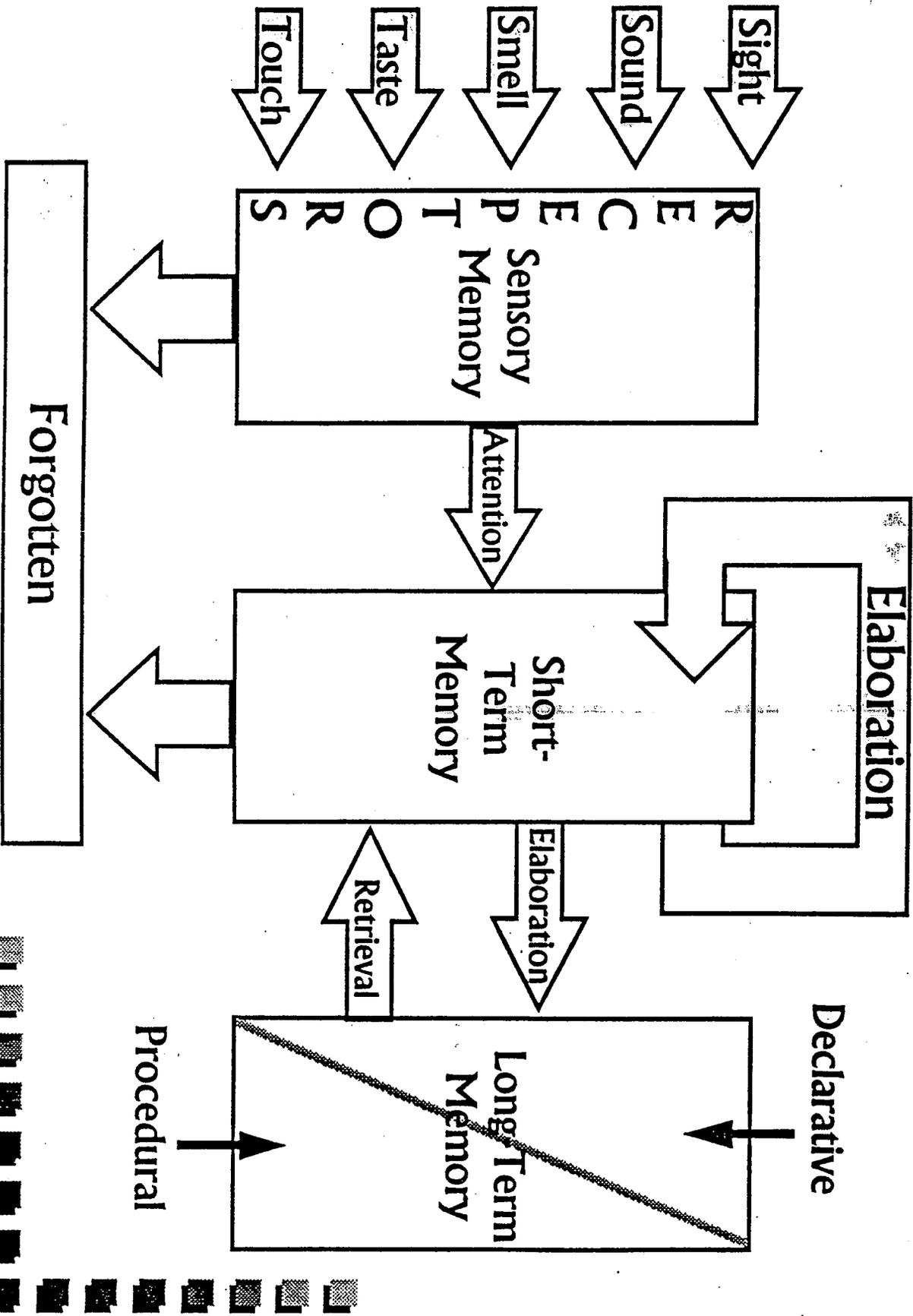
Impoverished environment -- decrease in the size and number of cells -- dendrites diminished.

Diamond, Marion. Enriching Heredity, Free Press: New York, 1988.

Reflecting on the learning environment ...

- What triggers students' attention?
- How is information presented?
- How are students challenged to participate .. and respond?
- In what ways are students asked to demonstrate what they know?
- How are students asked to revisit learnings?

The nature of active learning experiences has a direct relationship to determining the physical structure of the brain ... how many networks exist and how elaborate they are.



# DECLARATIVE MEMORY

## Semantic

Where we store our general knowledge

- ⇒ facts, concepts
- ⇒ names, faces

(independent of context ...  
acquired through learning)

## Episodic

Where we store episodes from our past ...

- ⇒ specific events, when and where

(erodes with age, recall not accurate)

## Procedural Memory ...

- ◆ typing and "keyboarding"
- ◆ decoding and computing
- ◆ problem solving

The skills in Procedural Memory have reached the point of "automaticity."

Pat Wolfe

# STEPS TO TEACHING

## Declarative Knowledge

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

## Procedural Knowledge

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

# Acquiring and Integrating Declarative Knowledge

Activities in Teacher's Manual for:

## *Constructing Meaning*

1. Use the three-minute pause.
2. Help students experience content using a variety of senses.
3. Present students with the K-W-L strategy.
4. Use the concept attainment process.
5. Use the reciprocal teaching strategy
6. Present students with the Before, During, After strategy.

## *Organizing*

1. Have students create physical and pictographic representations of information.
2. Have students use organizational patterns and their graphic representations.
3. Have students use organizational patterns and their graphic representations.
4. Provide students with advance organizer questions.
5. Present note-taking strategies that employ graphic representations.

## *Storing*

1. Present students with the strategy of symbols and substitutes.
2. Present students with the link strategy.
3. Present students with formal systems for storing information:
  - rhyming pegword
  - number/picture
  - familiar place

# Acquiring and Integrating Procedural Knowledge

Strategies in Teacher's Manual for:

## *Constructing Models*

1. Use "thinking aloud" to demonstrate a new skill or process.
2. Present students with a written set of steps.
3. Teach students to create flow charts.
4. Teach students to mentally rehearse the steps involved in a skill or process.

## *Shaping*

1. Demonstrate and provide practice in the important variations of the skill or process.
2. Point out common errors and pitfalls.
3. Provide a variety of situations in which students can use a specific skill or process.

## *Internalizing*

1. Help students set up a practice schedule.
2. Have students chart their accuracy when practicing new skills or processes.
3. Have students chart their speed when learning a new skill or process.

# Reflections

- How does \_\_\_\_\_  
\_\_\_\_\_ *I'm so embarrassed ~~leave~~  
I have never been so  
wrong. I thought I  
was eating my bag of* \_\_\_\_\_  
\_\_\_\_\_ *cookies only to find out* \_\_\_\_\_
- What role \_\_\_\_\_ *I was taking from yours.* \_\_\_\_\_  
\_\_\_\_\_ *SO please take my cookies* \_\_\_\_\_  
\_\_\_\_\_ *and enjoy!!* \_\_\_\_\_  
\_\_\_\_\_ *😊* \_\_\_\_\_
- What are \_\_\_\_\_  
term me \_\_\_\_\_  
\_\_\_\_\_

- What are some ways to increase: attention?  
\_\_\_\_\_ *Hope you enjoyed* \_\_\_\_\_  
\_\_\_\_\_ \_\_\_\_\_  
\_\_\_\_\_ \_\_\_\_\_

- What are sc \_\_\_\_\_  
work with st \_\_\_\_\_ *I don't really* \_\_\_\_\_  
\_\_\_\_\_ *understand your* \_\_\_\_\_  
\_\_\_\_\_ *attitude.* \_\_\_\_\_  
\_\_\_\_\_ \_\_\_\_\_  
with other t \_\_\_\_\_  
\_\_\_\_\_

- What are some ways to increase \_\_\_\_\_ memory?  
\_\_\_\_\_

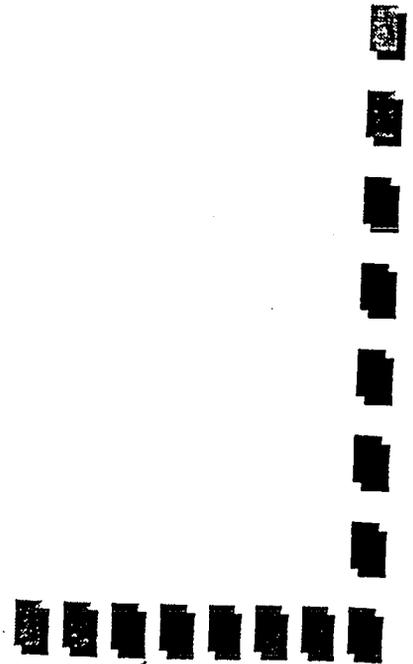
- What are some ways to make instruction "brain compatible"?  
\_\_\_\_\_

# Why This Task?

## Brain compatible instruction ...

- ⇒ Focuses on the learner's understanding of content and the ability to use the information rather than on the memorization of isolated bits of information.
- ⇒ Requires the learner to actively construct meaning, to make sense of information, to generate examples and relate content to what they already know and do, as well as the context in which they work.
- ⇒ Focuses on "real life" or "authentic" tasks that require problem solving, creative thinking, and critical thinking.
- ⇒ Requires teachers to structure what is addressed instructionally, and in the curriculum, around key ideas and related information rather than try to "cover content."

# Notes and Reflections



## Annotated Bibliography

Adler, Bill Jr., The Student's Memory Book, Doubleday, New York, 1988.

A book for high school or college students. The first part teaches several mnemonic strategies. Part Two gives examples of how to use these strategies in various subject areas—math, chemistry, languages, history, etc. Paperback, 100 pages. ISBN# 0-385-24559-9.

Ackerman, Diane, A Natural History of the Senses, Vintage, Random House, New York, 1990

An intriguing, fascinating book on the science, mood, character and geography of the human senses. It is extremely well written. The Boston Globe's review stated, "a heady, sometimes utterly engaging dive into the world around us—from the hormonal effects of the smell of musk to the biological necessity of touch".

Ackerman, Sandra, Discovering the Brain, for the National Academy of Sciences, National Academy Press, Washington, D.C., 1992.

Sandra Ackerman was selected to report on a July, 1990 symposium organized by the Institute of Medicine to initiate the presidential declaration of the 1990's as the Decade of the Brain. She does a remarkable job of distilling the themes from this conference. The book is an excellent introduction to neuroscience. Hardcover, 160 pages. ISBN#0-309-04529-0

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Armstrong is a psychologist and learning specialist. In this book he writes about children who are often labeled "underachievers", "unmotivated", or sometimes "learning disabled". It is his theory that in many cases these children are having difficulty in school because they have not been given the opportunity to learn in ways that are consistent with their learning styles. Using Gardner's theory of multiple intelligences, he offers concrete strategies that can be useful both at home and in the classroom. Paperback, 211 pages. ISBN # 0-87477-466-7.

Barrett, Susan L., It's All In Your Head: A Guide to Understanding Your Brain and Boosting Your Brain Power. Free Spirit Publishing Inc., 400 First Avenue North, Suite 616, Minneapolis, MN 55401, 1992.

Barrett has written this "owner's manual" on the brain as a text for students aged nine to fourteen. Clearly organized and delightfully illustrated, this book covers brain evolution and function, what intelligence is and isn't, creativity, right and left brains, problem solving, thinking skills, dreaming, and gender differences in the brain. Also available is a teacher's guide. Paperback, 150 pages. ISBN# 0-915739-45-8.

Black, Howard and Sandra, Organizing Thinking - Books I and II. Critical Thinking Press and Software, P.O. Box 448, Pacific Grove, CA 93950, 1990

These two handbooks contain lessons which integrate the teaching of thinking skills into elementary (Book I) and secondary (Book II) school instruction. The central feature of all lessons is the use of graphic organizers to illustrate how information is related. Wonderful full-page duplicating masters make these books immediately applicable. Paperback,

Bloom, Benjamin, "The Hands and Feet of Genius: Automaticity," Educational Leadership, February, 1986, pp. 70-77.

This article discusses Bloom's contention that expertise is a function of chunking information and practicing it to the point where many of the foundation skills are at the automatic level. He focuses on expertise in many areas—music, athletics, chess—and discusses the implications for educators in developing certain learning skills in students.

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Caine, Geoffrey, and Caine, Renate Nummela, Making Connections: Teaching and The Human Brain, ASCD, Alexandria, VA, 1991.

This book explores the implications of recent brain research for teaching and learning. The authors propose 12 principles of "brain-based" learning that should guide the creation of learning experiences. The framework is well-defined with suggestions for "Orchestrated Immersion," "Relaxed Alertness," and "Active Processing." Paperback, 180 pages. ISBN# 0-87120-179-8.

Calvin, William, and Ojemann, George, Conversations with Neil's Brain: The Neural Nature of Thought and Language. Addison-Wesley, New York, 1994.

This book tells the story of neurosurgery undertaken to end the seizures of epileptics who cannot be helped with conventional drug therapy. In a novelistic style, the story of Neil is detailed before, during, and after his surgery. The book is written by the surgeon and neuroscientist as they explore the intricate landscape of the brain, and in so doing, reveal the mystery of human memory, thought, and language. Hardcover, 330 pages. ISBN # 0-201-63217-9.

Coles, Gerald, The Learning Mystique, Fawcett Columbine, New York, 1987.

This is a somewhat controversial book in that it challenges the concept of learning disabilities. Coles states that many of the neurological explanations for learning disabilities have never been scientifically substantiated and that a considerable amount of professional practice in schools is based on mere speculation. He also challenges many common beliefs about dyslexia. Paperback, 288 pages. ISBN # 0-449-90351.

Cytowic, Richard E., M.D., The Man Who Tasted Shapes. G.P. Putnam's Sons, New York, 1993.

Cytowic uses a condition called synesthesia to explore how the human mind functions. While the discussion of synesthesia is fascinating, the more relevant part of the book for educators is the insights provided on emotions and reasoning. Hardcover, 249 pages. ISBN # 0-87477-738-0.

Damasio, Antonio R. Descartes' Error. G.P. Putnam's Sons, New York, 1994.

Damasio has written an engaging, informative book that challenges the dualisms of mind Vs. body and reason Vs. feeling. He causes us to rethink the commonly-held notion that emotions interfere with wise decisions, and that places feelings in the proper role in human functioning. Hardcover, 312 pages. ISBN # 0-399-13894-3.

Diamond, Marian, Enriching Heredity: The Impact of the Environment on the Anatomy of the Brain, Free Press, New York, 1988.

This book presents Diamond's research in detail. It does not deal with the educational implications of the research. Hardcover, 165 pages. ISBN# 0-02-907431-2.

Dorris, Michael, The Broken Cord, Harper Perennial

Dorris tells the story of his life with his adopted son who had Fetal Alcohol Syndrome. This is an excellent, but heart-rending book. Paperback.

Gardner, Howard, Frames of Mind: The Theory of Multiple Intelligences, Basic, 1985.

Gardner, Howard, The Unschooled Mind: How Children Think and How Schools Should Teach, Basic Books, New York, 1991.

In The Unschooled Mind, Gardner provides practical, well-grounded advice to school reformers who seek not rote learning but deep understanding. Drawing on the current state of cognitive research, he provides practical advice to school reformers. Hard cover, 300 pages. ISBN# 0-465-08895-3.

Goleman, Daniel, Emotional Intelligence: Why it can matter more than IQ, Bantam Books, New York, 1995.

Drawing on brain and behavioral research, Goleman shows the factors at work when people of high IQ flounder and those of modest IQ do well. These factors add up to what he terms "emotional intelligence," which includes are self-awareness and impulse control, persistence, self-motivation, empathy and social deftness. Hardcover, 352 pages. ISBN#0-553-09503-x.

Hart, Leslie, Human Brain, Human Learning, Longman, New York, 1985.

Hart's book is a somewhat of a classic in the field of the applications of cognitive research to teaching and learning. Unlike many books written about the brain, this one contains many practical suggestions on how to create school environments that help all learners to achieve. Paperback, 206 pages. ISBN# 0-582-28379-5

Healy, Jane M., Endangered Minds: Why Our Children Don't Think, Simon and Schuster, New York, 1990.

Dr. Healy, a psychologist and educator, provides well-grounded scientific knowledge in a very readable style. Her contention is that today's children are being raised in a neurally passive, language-deprived environment that poses a tremendous threat to their thinking processes. She also offers solutions that teachers and parents will find eminently workable. Hardcover, 366 pages. ISBN # 0-671-67349-1.

Healy, Jane, Your Child's Growing Mind, Doubleday, New York, 1987.

In this book, Healy addresses many of the same issues that are covered in Endangered Minds, however, the primary audience she targets is parents. Stages of child development and appropriate learning activities for each age are outlined in some detail. Paperback, 362 pages ISBN# 0-385-23150-4.

Healy, Jane, How to Hold Intelligent Conversations With Your Child (formerly Is Your bed Still There when You Close the Door?...and Other Playful Ponderings, Doubleday, New York, 1992.

Healy outlines in this small book "how to have intelligent and creative conversations with your kids." It is designed to give parents and teachers the skills and motivation to help preschoolers to adolescents develop truly flexible and productive minds. Hardcover, 182 pages. ISBN# 0-385-41762-4.

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This book bridges the gap between the findings of neuropsychological research and their application by the general public. It is a valuable resource for teachers as they design and deliver instruction at all levels as well as being useful for parents and students. Paperback, 390 pages. ISBN # 0-9636389-0-4.

Novitt-Moreno, Anne D. How Your Brain Works. Ziff-Davis Press, Emeryville, California, 1995.

With wonderful illustrations, Novitt-Moreno describes in few words, the human brain in general and discusses many common conditions and disorders. It covers an introduction to brain cells, sensory and motor function, growth and development, sensation, brain nutrition and circulation. Additional topics of Alzheimer's disease, stroke, epilepsy, psychiatric illnesses, and headaches are outlined. Softcover, 170 pages. ISBN # 1-56276-255-9.

Omstein, R. and Thompson, R. The Amazing Brain, Houghton Mifflin, Boston, 1984.

This is an excellent, easy-to-read introductory book on the human brain. What makes this book exceptional are the superb drawings by David Macaulay Paperback, 182 pages. ISBN# 0-395-40800-8.

Perkins, David. Smart Schools, Free Press, New York, 1992.

Perkins contends that our students have only the most fragile and superficial kind of knowledge upon graduating from our schools. He then introduces a workable, practical model for changing classroom instruction that is based on current cognitive research. Hardcover, 260 pages. ISBN#0-02-925215-6.

Restak, Richard, The Brain, Bantam, New York, 1984.

Restak, Richard, The Mind, Bantam, New York, 1988.

Restak, Richard, The Brain Has a Mind of Its Own, Harmony Books, New York, 1991.

This book is different from Restak's earlier books in that it contains essays on a variety of topics from "The Compassionate Brain," to "Thinking About Knowing." The book is both informative and humorous. Paperback, 201 pages. No ISBN#. QP376.R464

Restak, Richard, Receptors, Bantam, New York, 1993

Restak cites a series of discoveries showing that receptors are the gatekeepers of everything we know and feel. He makes the important point that everyone's brain is always on drugs—whether those drugs are the body's own neurotransmitters or prescriptions antidepressants or street-synthesized LSD. He makes his points through a series of stories, most of them focused around a particular scientist in history. Paperback, 216 pages. ISBN# 0-553-37441-9.

Schroeder, Cheryl A., Modern Concepts in Fetal Alcohol Syndrome and Fetal Alcohol Effects, 1994. Available from Creative Consultants, Inc., P.O. Box 6023, Laramie, WY 82070, or call Dr. Schroeder at (307) 745-3435 to order. Materials are also available for making presentations on the educational issues of FAS and FAE.

Somer, Elizabeth, Food and Mood: How the Nutrients in Food Improve Memory, Energy Levels, Sleep Patterns, Weight Management, and Attitude. Henry Holt and Company, New York, 1995.

The result of research encompassing thousands of scientific studies, this book includes the most current information and the latest findings on how nutrition is connected to depression, mood swings, irritability, SAD, and PMS. It includes self-assessment worksheets, quizzes, charts, menus, and practical suggestions for putting knowledge into action. Hardcover, 460 pages. ISBN # 0-8050-3125-1.

Sylwester, Robert, A Celebration of Neurons: An Educator's Guide to the Brain.

promises to be a comprehensive, relatively non-technical overview of current research findings in neuroscience. Sylwester uses wonderful metaphors as he helps the lay reader understand not only the research but also the educational implications.

Thompson, Richard, The Brain: An Introduction to Neuroscience, W.H. Freeman and Company, New York, 1985.

Written by a leading psychobiologist, this is an excellent book for those who want more than a general introduction to the physiology of the brain. It provides a technically detailed picture of the workings of the neuron, neurotransmitters, peptides, hormones, sensory processes and the life cycle of the brain. Paperback, 354 pages. ISBN # 0-7167-1462-0

Wolfe, Patricia, and Sorgen, Marny, Mind, Memory and Learning, Napa, California, 1990.

The first section of this book contains an overview of the research on how the mind learns including descriptions of sensory, short-term and long-term memories. Part II explores the general implications of the research for the classroom and the third section gives numerous examples of "brain-compatible," teacher-tested instructional strategies. Paperback, 60 pages. Available from MM&L, 80 Crest Road, Fairfax, CA 94930. Phone (415) 456-3398.

Wurtman, Judith, Managing Your Mind and Mood through Food, Harper Row, (Perennial Library) New York, 1986

In this book Dr. Wurtman, a renowned M.I.T. scientist, explains how what we eat and when we eat it affects our moods, mind, and lives. She focuses on how carbohydrates and proteins interact in the body, and how to use this knowledge to make the mind more alert or to focus and relax the mind. Paperback, 275 pages. ISBN 0-06-09138 - X.

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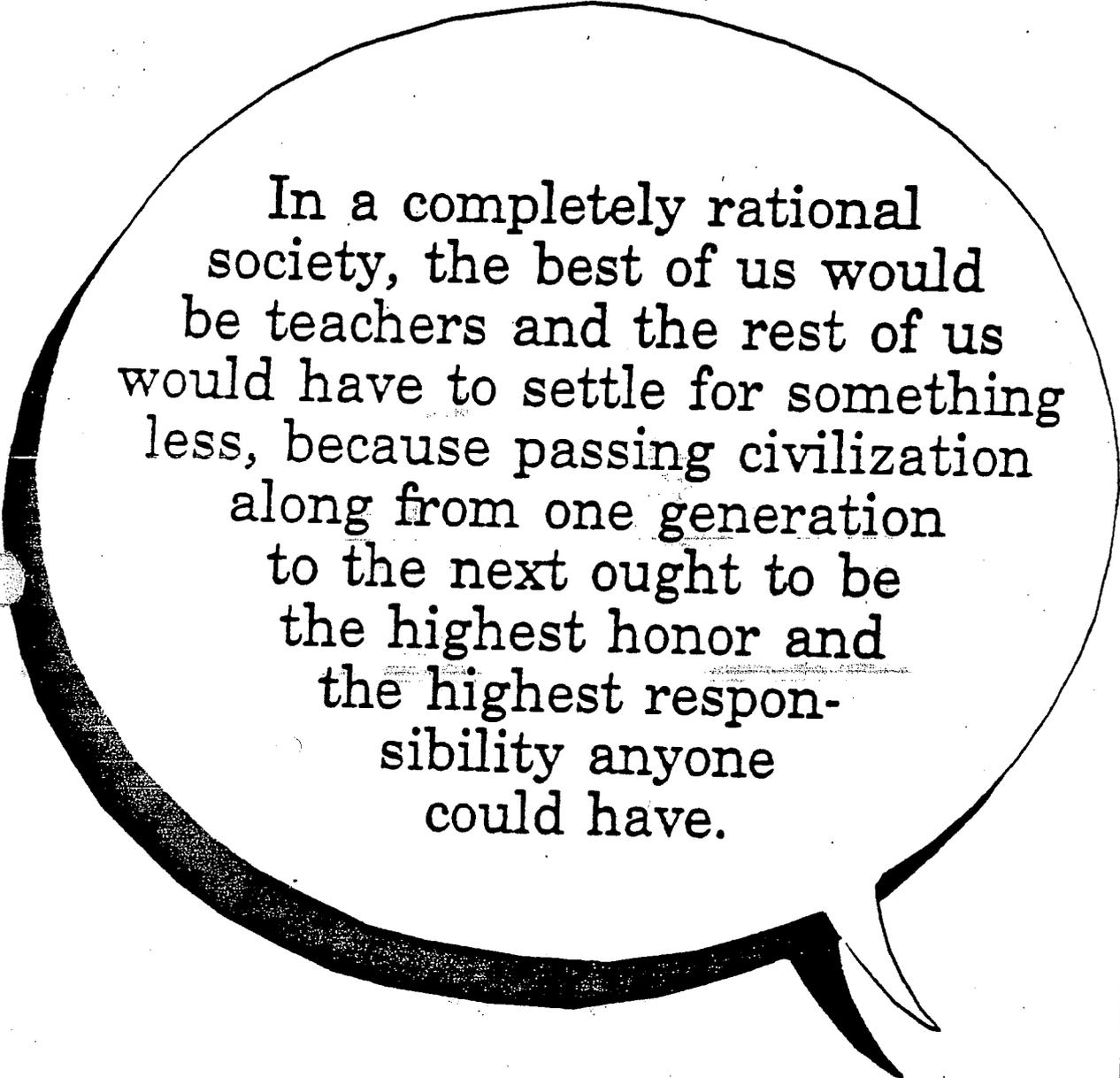
**"A mind that is stretched to a new idea never returns to its original dimensions."**

**- Oliver Wendell Holmes**



If a doctor, lawyer, or dentist had 40 people in his office at one time, all of whom had different needs, and some of whom didn't want to be there and were causing trouble, and the doctor, lawyer or dentist, without assistance, had to treat them all with professional excellence for nine months, then he might have some conception of the classroom teacher's job.

Donald O. Quinn



In a completely rational society, the best of us would be teachers and the rest of us would have to settle for something less, because passing civilization along from one generation to the next ought to be the highest honor and the highest responsibility anyone could have.

Lee Iacocca

# Articles for Reflection



*L. J.*

# ADD

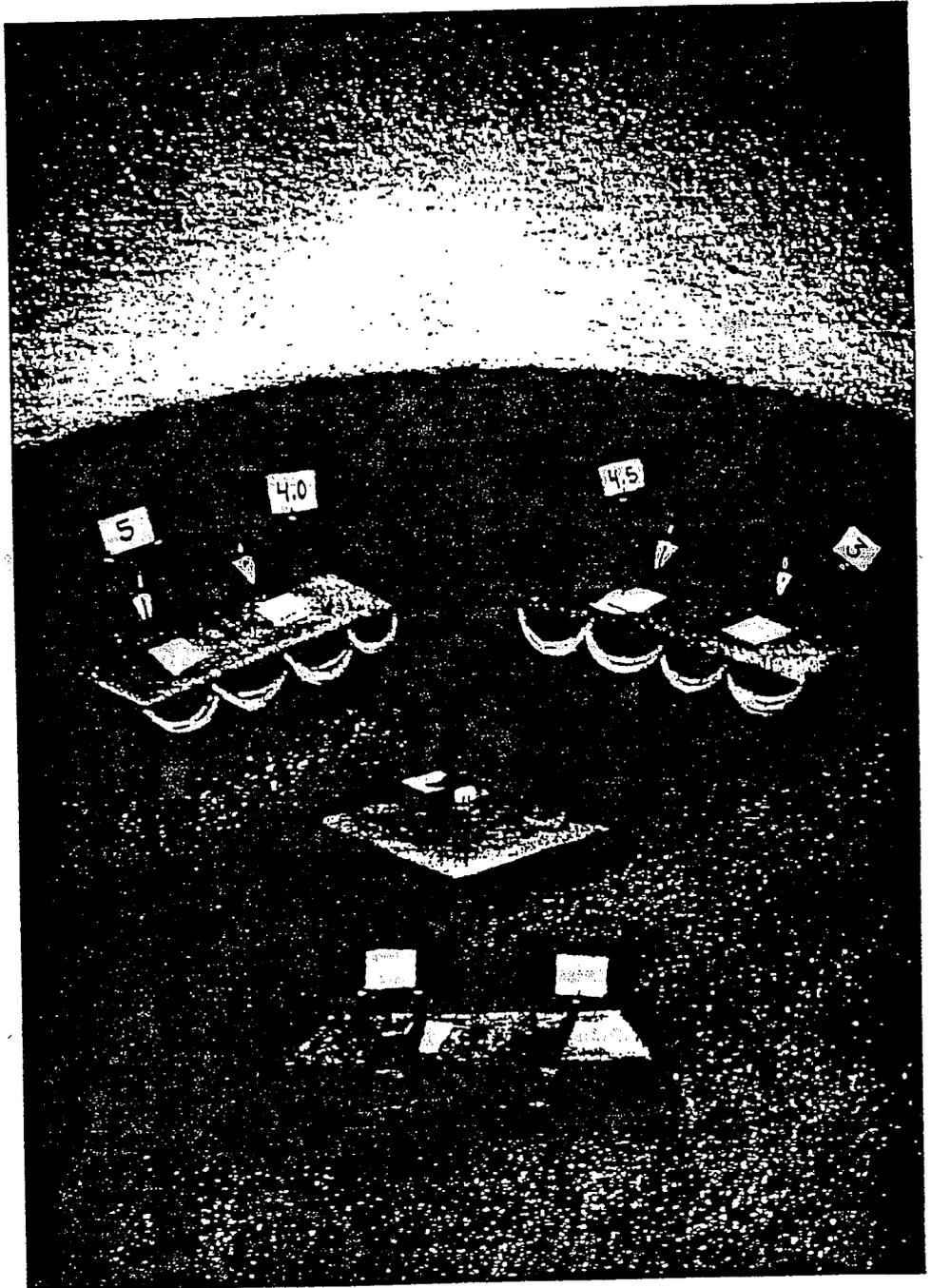
## *Does It Really Exist?*

BY THOMAS ARMSTRONG

*Mr. Armstrong questions the methods used to diagnose attention deficit disorder, the usefulness of a perspective that focuses on disability rather than potential, and the very existence of the disorder in the first place.*

**S**EVERAL YEARS ago I worked for an organization that assisted teachers in using the arts in their classrooms. We were located in a large warehouse in Cambridge, Massachusetts, and several children from the surrounding lower-working-class neighborhood volunteered to help with routine jobs. I recall one child, Eddie, a 9-year-old African American youngster possessed of great vitality and energy, who was particularly valuable in helping out with many tasks. These jobs included going around the city with an adult supervisor, finding recycled materials that could be used by teachers in developing arts programs, and then organizing them and even field-test-

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ing them back at the headquarters. In the context of this arts organization, Eddie was a definite asset.

A few months after this experience, I became involved in a special program through Lesley College in Cambridge, where I was getting my master's degree in special education. This project involved studying special education programs designed to help students who were having problems learning or behaving in regular classrooms in several Boston-area school districts. During one visit to a Cambridge resource room, I unexpectedly ran into Eddie. Eddie was a real problem in this classroom. He couldn't stay in his seat, wandered around the room, talked out of turn, and basically made the teacher's life miserable. Eddie seemed like a fish out of water. In the context of this school's special education program, Eddie was anything but an asset. In retrospect, he appeared to fit the definition of a child with attention deficit disorder (ADD).<sup>1</sup>

Over the past 15 years, ADD has grown from a malady known only to a few cognitive researchers and special educators into a national phenomenon. Books on the subject have flooded the marketplace, as have special assessments, learning programs, residential schools, parent advocacy groups, clinical services, and medications to treat the "disorder." (The production of Ritalin or methylphenidate hydrochloride — the most common medication used to treat ADD — has increased 450% in the past four years, according to the Drug Enforcement Agency.)<sup>2</sup> The disorder has solid support as a discrete medical problem from the Department of Education, the American Psychiatric Association, and many other agencies.

I'm troubled by the speed with which both the public and the professional community have embraced ADD. Thinking back to my experience with Eddie and the disparity that existed between Eddie in the arts organization and Eddie in the special education classroom, I wonder whether this "disorder" really exists *in* the child at all, or whether, more properly, it exists in the relationships that are present between the child and his or her environment. Unlike other medical disorders, such as diabetes or pneumonia, this is a disorder that pops up in one setting only to disappear in another. A physician mother of a child labeled ADD wrote to me not long ago about her frustration with this protean diagnosis: "I began pointing out to people that my child

is capable of long periods of concentration when he is watching his favorite sci-fi video or examining the inner workings of a pin-tumbler lock. I notice that the next year's definition states that some kids with ADD are capable of normal attention in certain specific circumstances. Poof. A few thousand more kids instantly fall into the definition."

There is in fact substantial evidence to suggest that children labeled ADD do not show symptoms of this disorder in several different real-life contexts. First, up to 80% of them don't appear to be ADD when in the physician's office.<sup>3</sup> They also seem to behave normally in other unfamiliar settings where there is a one-to-one interaction with an adult (and this is especially true when the adult happens to be their father).<sup>4</sup> Second, they appear to be indistinguishable from so-called normals when they are in classrooms or other learning environments where children can choose their own learning activities and pace themselves through those experiences.<sup>5</sup> Third, they seem to perform quite normally when they are *paid* to do specific activities designed to assess attention.<sup>6</sup> Fourth, and perhaps most significant, children labeled ADD behave and attend quite normally when they are involved in activities that *interest* them, that are *novel* in some way, or that involve high levels of stimulation.<sup>7</sup> Finally, as many as 70% of these children reach adulthood only to discover that the ADD has apparently just gone away.<sup>8</sup>

It's understandable, then, that prevalence figures for ADD vary widely — far more widely than the 3% to 5% figure that popular books and articles use as a standard. As Russell Barkley points out in his classic work on attention deficits, *Attention Deficit Hyperactivity Disorder: A Handbook for Diagnosis and Treatment*, the 3% to 5% figure "hinges on how one chooses to define ADHD, the population studied, the geographic locale of the survey, and even the degree of agreement required among parents, teachers and professionals. . . . Estimates vary between 1[% and] 20%."<sup>9</sup>

In fact, estimates fluctuate even more than Barkley suggests. In one epidemiological survey conducted in England, only two children out of 2,199 were diagnosed as hyperactive (.09%).<sup>10</sup> Conversely, in Israel, 28% of children were rated by teachers as hyperactive.<sup>11</sup> And in an earlier study conducted in the U.S., teachers rated 49.7% of boys as restless, 43.5%

of boys as having a "short attention span," and 43.5% of boys as "inattentive to what others say."<sup>12</sup>

## The Rating Game

These wildly divergent statistics call in to question the assessments used to decide who is diagnosed as having ADD and who is not. Among the most frequently used tools for this purpose are behavior rating scales. These are typically checklists consisting of items that relate to the child's attention and behavior at home or at school. In one widely used assessment, teachers are asked to rate the child on a scale from 1 (almost never) to 5 (almost always) with regard to behavioral statements such as: "Fidgety (hands always busy)," "Restless (squirms in seat)," and "Follows a sequence of instructions." The problem with these scales is that they depend on *subjective judgments* by teachers and parents who may have a deep, and often subconscious, emotional investment in the outcome. After all, a diagnosis of ADD may lead to medication to keep a child compliant at home or may result in special education placement in the school to relieve a regular classroom teacher of having to teach a troublesome child.

Moreover, since these behavior rating

there are no objective criteria through which to decide *how much* a child is demonstrating symptoms of ADD. What is the difference in terms of hard data, for example, between a child who scores a 5 on being fidgety and a child who scores a 4? Do the scores mean that the first child is one point more fidgety than the second? Of course not. The idea of assigning a number to a behavior trait raises the additional problem, addressed above, of context. The child may be a 5 on "fidgetiness" in some contexts (during worksheet time, for example) and a 1 at other times (during recess, during motivating activities, and at other highly stimulating times of the day). Who is to decide what the final number should be based on? If a teacher places more importance on workbook learning than on hands-on activities, such as building with blocks, the rating may be biased toward academic tasks, yet such an assessment would hardly paint an accurate picture of the child's total experience in school, let alone in life.

It's not surprising, then, to discover that

# EXACTLY WHEN DOES NORMAL FIDGETING TURN INTO ADD FIDGETING, AND WHEN DOES NORMAL DIFFICULTY PAYING ATTENTION BECOME ADD DIFFICULTY?

there is often disagreement among parents, teachers, and professionals using these behavior rating scales as to who exactly is hyperactive or ADD. In one study, parent, teacher, and physician groups were asked to identify hyperactive children in a sample of 5,000 elementary school children. Approximately 5% were considered hyperactive by at least one of the groups, while only 1% were considered hyperactive by all three groups.<sup>13</sup> In another study using a well-known behavior rating scale, mothers and fathers agreed that their children were hyperactive only about 32% of the time, and the correspondence between parent and teacher ratings was even worse: they agreed only about 13% of the time.<sup>14</sup>

These behavior rating scales implicitly ask parents and teachers to compare a potential ADD child's attention and behavior to those of a "normal" child. But this raises the question, What is normal behavior? Do normal children fidget? Of course they do. Do normal children have trouble paying attention? Yes, under certain circumstances. Then exactly when does normal fidgeting turn into ADD fidgeting, and when does normal difficulty paying attention become ADD difficulty?

These questions have not been adequately addressed by professionals in the field, yet they remain pressing issues that seriously undermine the legitimacy of these behavior rating scales. Curiously, with all the focus being placed on children who score at the high end of the hyperactivity and distractibility continuum, virtually no one in the field talks about children who must statistically exist at the opposite end of the spectrum: children who are too focused, too compliant, too still, or too *hypoactive*. Why don't we have special classes, medications, and treatments for these children as well?

## A Brave New World Of Soulless Tests

Another ADD diagnostic tool is a test

that assigns children special "continuous performance tasks" (CPTs). These tasks usually involve repetitious actions that require the examinee to remain alert and attentive throughout the test. The earliest versions of these tasks were developed to select candidates for radar operations during World War II. Their use with children in today's world is highly questionable. One of the most popular of the current CPT instruments is the Gordon Diagnostic System (GDS). This Orwellian device consists of a plastic box with a large button on the front and an electronic display above it that flashes a series of random digits. The child is told to press the button every time a "1" is followed by a "9." The box then records the number of "hits" and "misses" made by the child. More complex versions involving multiple digits are used with older children and adults.

Quite apart from the fact that this task bears no resemblance to anything else that children will ever do in their lives, the GDS creates an "objective" score that is taken as an important measure of a child's ability to attend. In reality, it tells us only how a child will perform when attending to a repetitive series of meaningless numbers on a soulless task. Yet ADD expert Russell Barkley writes, "[The GDS] is the only CPT that has enough available evidence . . . to be adopted for clinical practice."<sup>15</sup> As a result, the GDS is used not only to diagnose ADD but also to determine and adjust medication doses in children with the label.

There is a broader difficulty with the use of *any* standardized assessment to identify children as having ADD. Most of the tests used (including behavior rating scales and continuous performance tasks) have attempted to be validated as indicators of ADD through a process that involves testing groups of children who have previously been labeled ADD and comparing their test results with those of groups of children who have been judged to be "normal." If the assessment shows that it can

discriminate between these two groups to a significant degree, it is then touted as a valid indicator of ADD. However, one must ask how the initial group of ADD children originally came to be identified as ADD. The answer would have to be through an earlier test. And how do we know that the earlier test was a valid indicator of ADD? Because it was validated using two groups: ADD and normal. How do we know that *this* group of ADD children was in fact ADD? Through an even earlier test . . . and so on, ad infinitum. There is no Prime Mover in this chain of tests; no First Test for ADD that has been declared self-referential and infallible. Consequently, the validity of these tests must always remain in doubt.

## In Search of a Deficit

Even if we admit that such tests *could* tell the difference between children labeled ADD and "normal" children, recent evidence suggests that there really aren't any significant differences between these two groups. Researchers at the Hospital for Sick Children in Toronto, for example, discovered that the performance of children who had been labeled ADD did not deteriorate over time on a continuous performance task any more than did that of a group of so-called normal children. They concluded that these "ADD children" did not appear to have a unique sustained attention deficit.<sup>16</sup>

In another study, conducted at the University of Groningen in the Netherlands, children were presented with irrelevant information on a task to see if they would become distracted from their central focus, which involved identifying groups of dots (focusing on groups of four dots and ignoring groups of three or five dots) on a piece of paper. So-called hyperactive children did not become distracted any more than so-called normal children, leading the researchers to conclude that there did not seem to be a focused attention deficit in

these children.<sup>17</sup> Other studies have suggested that "ADD children" don't appear to have problems with short-term memory or with other factors that are important in paying attention.<sup>18</sup> Where, then, is the attention deficit?

### A Model of Machines and Disease

The ADD myth is essentially a *paradigm* or world view that has certain assumptions about human beings at its core.<sup>19</sup> Unfortunately, the beliefs about human capacity addressed in the ADD paradigm are not terribly positive ones. It appears as if the ADD myth tacitly endorses the view that human beings function very much like machines.<sup>20</sup> From this perspective, ADD represents something very much like a mechanical breakdown. This underlying belief shows up most clearly in the kinds of explanations that parents, teachers, and professionals give to children labeled ADD about their problems. In one book for children titled *Otto Learns About His Medicine*, a red car named Otto goes to a mechanic after experiencing difficulties in car school. The mechanic says to Otto, "Your motor does go too fast," and he recommends a special car medicine.<sup>21</sup>

While attending a national conference

ways of explaining ADD to children, including comparisons to planes ("Your mind is like a big jet plane . . . you're having trouble in the cockpit"), a car radio ("You have trouble filtering out noise"), and television ("You're experiencing difficulty with the channel selector"). These simplistic metaphors seem to imply that human beings really aren't very complex organisms and that one simply needs to find the right wrench, use the proper gas, or tinker with the appropriate circuit box — and all will be well. They are also just a short hop away from more insulting mechanical metaphors ("Your elevator doesn't go all the way to the top floor").

The other feature that strikes me as being at the heart of the ADD myth is the focus on *disease* and *disability*. I was particularly struck by this mindset while attending a workshop with a leading authority on ADD who started out his lecture by saying that he would treat ADD as a medical disorder with its own etiology (causes), pathogenesis (development), clinical features (symptoms), and epidemiology (prevalence). Proponents of this view talk about

the fact that there is "no cure" for ADD and that parents need to go through a "grieving process" once they receive a "diagnosis."<sup>22</sup> ADD guru Russell Barkley commented in a recent address: "Although these children do not look physically disabled, they are neurologically handicapped nonetheless. . . . Remember, this is a disabled child."<sup>23</sup> Absent from this perspective is any mention of a child's potential or other manifestations of health — traits that are crucial in helping a child achieve success in life. In fact, the literature on the strengths, talents, and abilities of children labeled ADD is almost nonexistent.<sup>24</sup>

### In Search of the ADD Brain

Naturally, in order to make the claim that ADD is a disease, there must be a medical or biological cause for it. Yet, as with everything else about ADD, no one is exactly sure what causes it. Possible biological causes that have been proposed include genetic factors, biochemical abnormalities (imbalances of such brain chemicals as serotonin, dopamine, and norepinephrine), neurological damage, lead poisoning, thyroid problems, prenatal exposure to various chemical agents, and delayed myelination of the nerve pathways

In its search for a physical cause, the ADD movement reached a milestone with the 1990 publication in the *New England Journal of Medicine* of a study by Alan Zametkin and his colleagues at the National Institute of Mental Health.<sup>25</sup> This study appeared to link hyperactivity in adults with reduced metabolism of glucose (a prime energy source) in the premotor cortex and the superior prefrontal cortex — areas of the brain that are involved in the control of attention, planning, and motor activity. In other words, these areas of the brain were not working as hard as they should have been, according to Zametkin.

The media picked up on Zametkin's research and reported it nationally.<sup>27</sup> ADD proponents latched on to this study as "proof" of the medical basis for ADD. Pictures depicting the spread of glucose through a "normal" brain compared to a "hyperactive" brain began showing up in CH.A.D.D. (Children and Adults with Attention Deficit Disorder) literature and at the organization's conventions and meetings. One ADD advocate seemed to speak for many in the ADD movement when she wrote: "In No-

vember 1990, parents of children with ADD heaved a collective sigh of relief when Dr. Alan Zametkin released a report that hyperactivity (which is closely linked to ADD) results from an insufficient rate of glucose metabolism in the brain. Finally, commented a supporter, we have an answer to skeptics who pass this off as bratty behavior caused by poor parenting."<sup>28</sup>

What was *not* reported by the media or cheered by the ADD community was the study by Zametkin and others that came out three years later in the *Archives of General Psychiatry*. In an attempt to repeat the 1990 study with adolescents, the researchers found no significant differences between the brains of so-called hyperactive subjects and those of so-called normal subjects.<sup>29</sup> And in retrospect, the results of the first study didn't look so good either. When the original 1990 study was controlled for sex (there were more men in the hyperactive group than in the control group), there was no significant difference between groups.

A recent critique of Zametkin's research by faculty members at the University of Nebraska also pointed out that the study did not make clear whether the lower glucose rates found in "hyperactive brains" were a cause or a result of attention prob-

jects were started and then had their levels of adrenalin monitored, adrenalin levels would probably be quite high. We would not say, however, that these individuals had an adrenalin disorder. Rather, we'd look at the underlying conditions that led to abnormal adrenalin levels. Similarly, even if biochemical differences did exist in the so-called hyperactive brain, we ought to be looking at the nonbiological factors that could account for some of these differences, including stress, learning style, and temperament.

### The Stigma of ADD

Unfortunately, there seems to be little desire in the professional community to engage in dialogue about the reality of attention deficit disorder; its presence on the American educational scene seems to be a fait accompli. This is regrettable, since ADD is a psychiatric disorder, and millions of children and adults run the risk of stigmatization from the application of this label.

In 1991, when such major education-

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al organizations as the National Education Association (NEA), the National Association of School Psychologists (NASP), and the National Association for the Advancement of Colored People (NAACP) successfully opposed the authorization by Congress of ADD as a legally handicapping condition. NEA spokesperson Debra DeLee wrote, "Establishing a new category [ADD] based on behavioral characteristics alone, such as overactivity, impulsiveness, and inattentiveness, increases the likelihood of inappropriate labeling for racial, ethnic, and linguistic minority students."<sup>1</sup> And Peg Dawson, former NASP president, pointed out, "We don't think that a proliferation of labels is the best way to address the ADD issue. It's in the best interest of all children that we stop creating categories of exclusion and start responding to the needs of individual children."<sup>2</sup> ADD nevertheless continues to gain ground as the label du jour in American education. It's time to stop and take stock of this "disorder" and decide whether it really exists or is instead more a manifestation of society's need to have such a disorder.

1. In this article, I've used the generic term "atten-

- tion deficit disorder" (ADD) rather than the American Psychiatric Association's current diagnostic category of "attention deficit hyperactivity disorder" (ADHD) because of its wider use in popular culture.
2. Ritalin production figures were provided in a personal communication from the Drug Enforcement Agency's public relations department.
  3. Esther K. Sleator and Rina L. Ullmann, "Can the Physician Diagnose Hyperactivity in the Office?," *Pediatrics*, vol. 67, 1981, pp. 13-17.
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  5. R. G. Jacob, K. D. O'Leary, and C. Rosenblad, "Formal and Informal Classroom Settings: Effects on Hyperactivity," *Journal of Abnormal Child Psychology*, vol. 6, 1978, pp. 47-59; and Donald H. Sykes, Virginia J. Douglas, and Gert Morgenstern, "Sustained Attention in Hyperactive Children," *Journal of Child Psychology and Psychiatry*, vol. 14, 1973, pp. 213-20.
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  8. Gabrielle Weiss et al., "Hyperactives as Young Adults," *Archives of General Psychiatry*, June 1979, pp. 675-81.
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  10. Eric Taylor and Seija Sandberg, "Hyperactive Behavior in English Schoolchildren: A Questionnaire Survey," *Journal of Abnormal Child Psychology*, vol. 12, 1984, pp. 143-55.
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  12. John S. Werry and Herbert C. Quay, "The Prevalence of Behavior Symptoms in Younger Elementary School Children," *American Journal of Orthopsychiatry*, vol. 41, 1971, pp. 136-43.
  13. Nadine M. Lambert, Jonathan Sandoval, and Dana Sassone, "Prevalence of Hyperactivity in Elementary School Children as a Function of Social System Definers," *American Journal of Orthopsychiatry*, vol. 48, 1978, pp. 446-63.
  14. McGuinness, pp. 188-89.
  15. Barkley, p. 329.
  16. Russell Schachar et al., "Attaining and Maintaining Preparation: A Comparison of Attention in Hyperactive, Normal, and Disturbed Control Children," *Journal of Abnormal Child Psychology*, vol. 16, 1988, pp. 361-78.
  17. Jaab van der Meere and Joseph Sergeant, "Focused Attention in Pervasively Hyperactive Children," *Journal of Abnormal Child Psychology*, vol. 16, 1988, pp. 627-39.
  18. See Esther Benezra and Virginia I. Douglas, "Short-Term Serial Recall in ADHD, Normal, and Reading-Disabled Boys," *Journal of Abnormal Child Psychology*, vol. 16, 1988, pp. 511-25; and Robert A. Rubinstein and Ronald T. Brown, "An Evaluation of the Validity of the Diagnostic Category of Attention Deficit Disorder," *American Journal of*

- Orthopsychiatry*, vol. 54, 1984, pp. 398-414.
19. For an overview of the function of paradigms in scientific development, see Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962).
  20. For a look at the image of the machine as it affects special education perspectives in general, see Lois Heshusius, "At the Heart of the Advocacy Dilemma: A Mechanistic World View," *Exceptional Children*, vol. 49, 1982, pp. 6-11.
  21. Matthew Galvin, *Otto Learns About His Medicine: A Story About Medication for Hyperactive Children* (New York: Magination Press, 1988).
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# Is Attention Deficit Disorder Becoming A Desired Diagnosis?

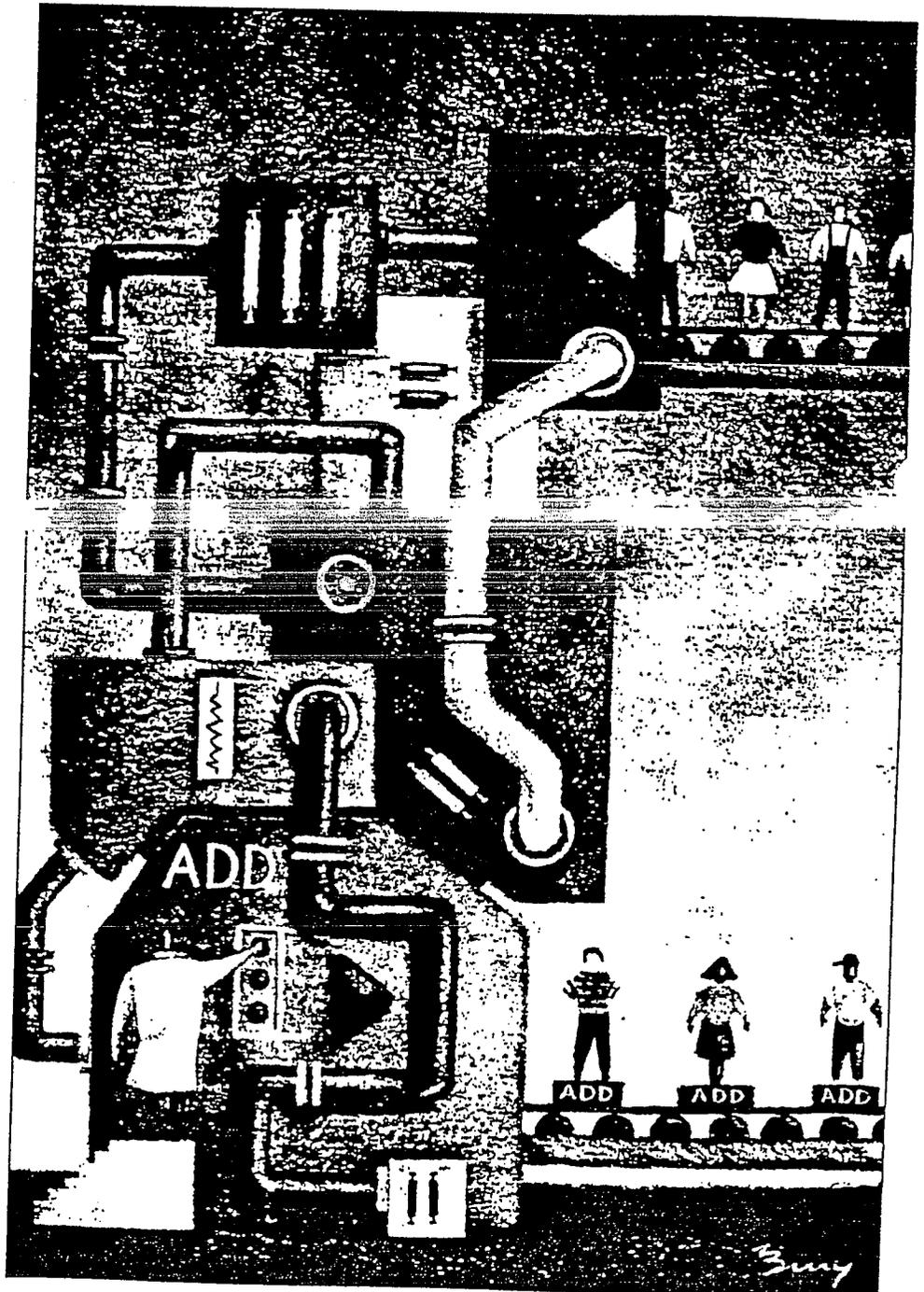
BY RICHARD W. SMELTER, BRADLEY W. RASCH, JAN FLEMING, PAT NAZOS, AND SHARON BARANOWSKI

*Professionals who serve children must exercise due caution when labeling children as suffering from ADD or ADHD, the authors warn. Likewise, those who work in schools should refrain from implying that such*

*diagnosis absolves the child from all responsibility for his or her behavior in the school setting.*

**I**N CASE anyone has failed to notice, we live in a society that is rapidly being transformed. We all know about changes involving science, technology, and even human demographics. But many of us tend to overlook large changes taking place in the arena of social interaction, the often subtle manner in which individuals relate to

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one another. Sometimes, however, these interactions are not subtle at all and can lead to anxiety and conflict. When that happens, the disputants might resolve their own differences, or they might seek professional help.

We also live in an age in which people seem preoccupied with finding an underlying cause for everything, especially in the areas of medical science and human behavior. Year after year, the medical profession forges ahead, offering the public new hope, potential cures, and new diagnoses. Transplant this focus on underlying causes into psychology, and we have a corresponding focus on new rationales for behavior.

Over the past decade or so, rationales have become very important to our modern theories of social interaction. Almost overnight, or so it seems, terms such as "guilty," "responsible," "liable," "self-control," and a plethora of others have become passé, their use denoting the speaker as some type of ultraconservative reactionary. The use of some other terms, however, is on the rise; one hears more and more of "disorders," "afflictions," "dysfunctions," and "shared responsibility."

We suggest that in the current atmosphere of acceptance and explanation it is far easier to feel good about one's negative behaviors than it was 50 years ago. Doing a "bad" thing implies responsibility and guilt, as well as the need for some punitive action on the part of one's social peers. But having a "dysfunction" carries no such social stigma; instead, it evokes sympathy, feelings of compassion, and a genuine desire to help the transgressor. From this, we suggest, comes the natural propensity of individuals to seek to escape from societal censure by claiming the role of victim as opposed to that of victimizer.

We can sense this change in the news every day. Bank robbers do not simply want an easy road to wealth; they are suffering from some type of compulsive behavior. Rapists are not sadistic opportunists with no sense of right and wrong; they have deep-seated doubts of their own sexuality, probably caused by some sort of abuse that we can ascribe to their parents or caretakers. We have seen the logical extension of all this: patricide and matricide and the hacking off of members of a spouse's body are acceptable behaviors, as long as you can document that you have been the re-

ipient of abuse. The list of negative behaviors that we as a society hold people responsible for is shrinking year by year, while the list of negative behaviors we ascribe to "affliction" grows ever longer.

We are all susceptible to this need to avoid blame; it is not confined to the criminal element. Indeed, it stems from a natural, human desire to be well-thought-of. This is not lost on the children in our schools or on their parents. Like the rest of us, they read the papers and watch the news on television. They are aware that in the contemporary social landscape placing blame on others is becoming politically incorrect. This social change is particularly appealing when Johnny comes home with yet another detention slip or when Sally throws her book across the classroom after being told to sit still.

If misbehaviors persist, Johnny and Sally will eventually be labeled "discipline problems" and will be suspended for insubordination. All too often such an action sparks a mad dash to the doctor's or psychologist's office in order to see if the verdict "discipline problem" can be tempered somewhat by the discovery of some hidden malady. Lo and behold, the child emerges from this visit with a diagnosis of Attention Deficit Disorder (ADD) or Attention Deficit Hyperactivity Disorder (ADHD).

### Whose Needs Are Being Met?

The rush to label schoolchildren as suffering from ADD or ADHD has reached nearly epidemic proportions. Currently, between 3% and 5% of U.S. students (1.35 million to 2.25 million children) have been diagnosed as having ADD. Is it time to investigate why this is happening? Perhaps there is more than one patient making the trip to the doctor's office: the child with the discipline problem *and* the child's parents. After all, there is no definitive test for the disorder and no agreed-upon etiology. There are no blood tests to be run, no x-rays to be taken. It would seem, at least on the surface, that people generally enjoy being told by their physician that they have a clean bill of health and have nothing wrong with them; why, then, do parents wish to come away with a diagnosis of ADD for their child?

The answer, of course, is that the diagnosis meets the needs of the parents more than it does those of the child. Almost at once, the parents feel relieved of some real

or perceived pressures from educators, grandparents, and family friends. Having been unable to "control" the behavior of their children, they can now assign the control to Ritalin or some other drug. They are thus almost magically transformed into model parents. "I can't control you, son, but I have fulfilled my role as a parent by finding out what's 'wrong' with you."

School personnel often feed into parents' desire for a medical diagnosis by holding off on any contemplated "behaviorally disordered" classification and by directly or indirectly encouraging parents to seek "medication." In short, all the adults seem happy that some "dysfunction" has been discovered — exactly the opposite of what our normal reaction would be if our doctors discovered any other malady.

In addition, a parent may be less than effective in some areas of parenting. Denial of this shortcoming on the part of parents is natural and to be expected. These parents may seek the ADD diagnosis because it lets them off the hook, so to speak. It focuses attention on the child and on getting a prescription filled and thus demands no alteration of parents' behaviors or even any serious examination of them. The child now has a "medical condition" that has "nothing" to do with the child's upbringing. However, no parental introspection leads to no change in expectations or in conditions in the home. In this way, a diagnosis of ADD may not offset extremely negative conditions in a child's home that might best be served by the intervention of a social worker.

We are not questioning a physician's or psychologist's diagnosis of ADD. But we are suggesting that such a diagnosis be part of a total, wide-ranging investigation as to the conditions in which the child lives.

We have also noted that there is seldom, if ever, any reluctance on the part of the parents of ADD children to tell anyone within earshot that their child suffers from ADD. Sympathy is the usual reward for such utterances, and everyone likes sympathy. It is also a good statement to run by one's next-door neighbor the next time Bobby climbs over the fence and tramples the flower bed. We mustn't be too "hard" on the boy. After all, he's afflicted with ADD.

Popular magazines, television shows, and other media continually bombard parents with information on ADD. Many of

# THE CLASSIFICATION OF ADD OR ADHD IS NOT A LICENSE TO GET AWAY WITH ANYTHING, BUT RATHER AN EXPLANATION THAT WILL LEAD TO LEGITIMATE HELP.

these sources of information portray the disorder in such a way that virtually any youngster could be so classified. At one time or another, all children exhibit socially unacceptable behaviors; that is part of the maturation process. Anyone — even we professionals — can become hyperactive or distractible when forced to sit through a boring lecture or two. Going on a “shopping spree” is certainly a type of “impulsive” behavior. Yet when we give in to such an impulse, we don’t immediately classify ourselves as ADD.

To further complicate the issue, parents with very low incomes generally qualify for increased Medicaid or Supplemental Social Security Income benefits if their child is diagnosed as afflicted with ADD or ADHD. Does this offer an additional incentive to have one’s child diagnosed thus? Are there individuals in this world who would encourage their children to “act up” in order to obtain more money?

## Who Else Is ‘Off the Hook’?

Children are often more sophisticated than we give them credit for being. In this whole process, they are aware of what is going on. They are aware that the adults have found them difficult to handle. They are aware that conventional controls have not sufficed, and they are capable of working to sabotage the goals of those who would control them. Even if correctly labeled as ADD, the thinly veiled message that the child receives upon diagnosis is that he or she is somehow less responsible for his or her actions than the minute before the diagnosis was given.

Great care must be taken lest this awareness become an excuse for every disruption under the sun. The fact that a child is taking Ritalin does not afford him a license to affect other students at school in negative ways. A diagnosis of ADD is not an excuse to hit other children or to sneer at the teacher. Distractibility and hyperactivity are more closely associated with

involuntary behaviors; waiting for another student after school in order to beat him up is most definitely a planned and voluntary action and should not be argued away by the aggressor’s ADD classification.

Physicians and psychologists with ADD patients should exercise due caution when counseling the parents of afflicted children. Certain negative behaviors can be explained and even excused by a diagnosis of ADD, while others cannot. We must not lower our expectations for children because of the ADD diagnosis, or they will most certainly meet these lowered expectations. Lowered expectations can do great harm to a child. Given the fact that etiology and di-

agnosis are, at bottom, educated guesswork, this lowering of expectations for a child is not acceptable. Physicians should keep in close touch with the child’s school in order to monitor the effect that the medication is having.

It is also unreasonable for school administrators to expect teachers to accommodate any type of aberrant behavior under the ADD umbrella. This distorts the ADD diagnosis, for ADD is not synonymous with “behaviorally disordered.” Therefore, children who are classified as ADD may also be considered for a special education evaluation if it is thought that their behaviors are beyond the realm of the ADD or ADHD spectrum.

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Classroom teachers have the added responsibility of conveying to ADD students that, now that they are receiving help with their affliction, expectations for their classroom behavior will rise. After all, that is the purpose of medicating an ADD child: to bring that child into the circle of what is considered "normative" behavior. (And let us not forget that any sociologist can tell us that our definitions of "normative" often change dramatically from generation to generation.)

Adult counseling must also be a component of any ADD treatment. Children are experts at making excuses, and we do not want to give them the message that their classification as ADD or their being on medication affords them some added excuse whenever they get into trouble. We have to preserve the rights of the afflicted child's peers as well as the rights of the afflicted child. Physicians, psychologists, school officials, and teachers have an obligation to the child and the child's parents to explain that the classification of ADD or ADHD is not a license to get away with anything, but rather an explanation that may lead to legitimate help for the child in question.

### An Edifice Built on Shifting Sand

We need to continually point out the facts that there is no concrete proof that the condition known as Attention Deficit Disorder even exists and that diagnosing the affliction remains more an art than a science. Moreover, the affliction seems to have no physiological basis. Although some correlation has been noted between fevers

in early childhood and ADD, no causal connection has been proved, and the symptoms of ADD may be indicative of many other disorders, including a wide range of behavioral disorders.

When an etiology is not agreed on, when a definitive test is not available, and when only the efficacy of treatment seems to validate the initial diagnosis, then research typically abounds. But in the case of ADD, this has not held true. Clearly, more research is called for in order to determine whether a definitive test or series of tests is possible.

We also wish to point out that behavioral aberrations in children (and in adults, for that matter) seem to rise in societies whenever there is general disagreement as to whether or not people should be held responsible for socially unacceptable behaviors. In this context, it is interesting to note the experience of modern Russia when compared to that of the Soviet Union. Russian police report that Moscow is being infested by elements of organized crime, something it did not experience under the Communist Party dictatorship. We are not here advocating police states or schools run as such, but it is curious to note how many people formerly had more control over themselves.

Now we are faced with an affliction that is based mainly on conjecture and that is becoming increasingly popular in a society that is becoming increasingly conflicted with regard to differentiating between right and wrong. In an age in which discipline in the schools was strictly enforced, such afflictions or alleged afflictions were unknown. Children were, perhaps correctly and perhaps incorrectly, simply referred to as "discipline problems" and dealt with as such. It is probably safe to assume that, if we as a society continue to have problems deciding what one should or should not be held accountable for, we can expect to see a rise in the number of classified dysfunctions.

Simply stated, if excuses are courted and deliberately sought, then there will be no end of excuses available. This will be all the more lamentable if yet a further excuse for greater dysfunctional behavior lies embedded within each new excuse, leading to further diagnosis, more ex-

cuses, and so on.

To build a great medical/psychological edifice on such shifting sand seems ill-advised. It would behoove educators and the medical and psychological professions alike to downplay the diagnosis of ADD, the potential benefits of medication, and the insulation that such diagnosis affords the patient from paying the price for poor behavior at school.

We feel the need to conclude with a statement that is highly controversial and that, consequently, is seldom uttered: all children are not educable in the conventional sense, that is, within the walls of the school. Children are not interchangeable parts on a conveyor belt on a production line.

This does not necessarily mean that there is anything "wrong" with the children who do not conform; they may simply hate school. Adults tend to stick to tasks they dislike (sometimes for entire careers) because they have more self-control than children and because they deem the rewards worth the distaste of the job. Children, being children, shun that which they find boring or distasteful, and their attention starts to wander. In short, not every human action (or lack of action) that is not identical to the actions of the majority can be attributed to some affliction. Such different behavior might just be the product of human choice. We must, therefore, be somewhat skeptical about ADD-classified children who, when removed from the classroom setting, magically lose their ADD symptoms.

The professions that serve these children, from the school to the doctor's office, must exercise due caution when labeling children as suffering from ADD or ADHD. Likewise, those of us who work in schools should refrain from implying that the diagnosis of ADD or ADHD absolves the child from all responsibility for his or her behavior in the school setting. In the reality of the workaday world, the individual is expected to cope with society to a greater degree than society is expected to cope with the individual. Children with negative social behaviors get classified and treated; adults get fired or arrested.



"I'm thinking of going back to school, Ms. Johnson."

1. *Children with ADD: A Shared Responsibility* (New York: Council for Exceptional Children, 1992), p. 7. K

# Attention Deficit Hyperactivity Disorder

## *A Parent's Perspective*

BY ANNA M. THOMPSON

*As a parent and an educator who has spent the last 10 years struggling to assist her own ADHD child, Ms. Thompson gives readers suggestions for managing the challenges that face such children and for enhancing the quality of their lives.*

**A**ttention deficit disorder (ADHD) has had many names over the years: organic drivenness, "fidgety Phils," post-encephalitic behavior disorder, minimal brain damage, minimal brain dysfunction, hyperkinesis, hyperactivity, attention deficit disorder (ADD), and attention deficit disorder with or without hyperactivity (ADD/ADHD).<sup>1</sup> A child with ADD without hyperactivity would exhibit all the distractibility of an ADHD child without the physical activity. Many of the current books available use ADD and ADHD interchangeably. For the purposes of this discussion, I will use ADHD, as that accurately represents my son's diagnosis and my experience as a parent.

### What Is ADHD?

ADHD is a neurological syndrome whose

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classic, defining triad of symptoms includes impulsivity, distractibility, and hyperactivity or excess energy.<sup>2</sup> Studies indicate that approximately 3% to 5% of children in the U.S. can be diagnosed with ADHD. Among children with ADHD who have been referred to clinics, boys outnumber girls by a ratio of approximately 6:1.<sup>3</sup>

ADHD has been defined in a variety of ways over the past 20 years, leading to confusion among education professionals. Most recently ADHD has been described as the display, with developmentally inappropriate frequency, of inattention, impulsivity, and overactivity.<sup>4</sup> To be considered symptoms of ADHD, the behaviors must initially have been exhibited in early childhood (prior to the age of 7) and displayed across a variety of settings (school, home, and play). To meet the diagnostic criteria of the American Psychiatric Association, the child must have been creating disturbances for at least six months, during which time at least eight of the following behaviors must have been exhibited:

1. often fidgets with hands or squirms in seat (though in adolescents this symptom may be limited to subjective feelings of restlessness);

2. has difficulty remaining seated when required to do so;

3. is easily distracted by extraneous stimuli;

4. has difficulty waiting for turns in games or group situations;

5. often blurts out answers to questions before the questions have been completed;

6. has difficulty (not due to oppositional behavior or failure of comprehension) following through on instructions from others;

7. has difficulty sustaining attention in tasks or play activities;

8. often shifts from one uncompleted activity to another;

9. has difficulty playing quietly;

10. often talks excessively;

11. often interrupts or intrudes on others (e.g., butts into other children's games);

12. often does not seem to listen to what is being said to him or her;

13. often loses things necessary for tasks or activities at school or at home (e.g., toys, pencils, books, assignments); or

14. often engages in physically dangerous activities without considering possible consequences (e.g., runs into the street without looking), but not for the purpose

of thrill-seeking.

At the age of 3, our son Karl exhibited *all* 14 of these criteria. He was and still is a textbook case of ADHD. At the time he was diagnosed, I would gladly have blamed myself for being a bad parent who did not provide enough discipline rather than admit that anything was wrong with my child. It was only through consultations with Karl's day-care provider, with my family physician, and with a psychiatrist specializing in the diagnosis and treatment of ADHD — as well as through my own research — that I began to realize that I must treat ADHD like any other neurological condition. If Karl had inherited family genes for epilepsy rather than ADHD, I would have provided him with whatever anti-seizure medication and treatment he needed to help him live a normal life. How could I treat ADHD any differently? This diagnosis gave a name to Karl's problem and encouraged us to learn as much as possible about ADHD.

After consulting with Karl's day-care provider, our family physician was fairly confident that Karl was "hyper." But he did not feel comfortable treating Karl and sought out a local specialist in ADHD to whom we could be referred. He pointed out that a specialist in ADHD could best determine if Karl's problem was ADHD or behavioral in nature. A psychiatrist or neurologist would also be more current on the drugs used to treat ADHD.

### Testing

There is no one definitive diagnostic test for ADHD. The most reliable diagnostic tool is the individual's history as elicited from the child, from parents, and, very importantly, from teacher reports. Psychological testing can be helpful in determining an ADHD diagnosis, but it is not definitive.<sup>5</sup> A careful evaluation of ADHD must take into account other conditions that may look like ADHD, some of which must be tested by a physician to be ruled out. Because of a family history of epilepsy, Karl was given an EEG (electroencephalogram) to determine if petit mal might be the cause of his inattentiveness. A negative EEG ruled out this possibility.

For several months after my initial meeting with an ADHD specialist, Karl's teachers and I kept a detailed log of Karl's activity levels. Temper tantrums, aggressive outbursts, and impulsivity were all record-

ed, as were the conditions prior to each incident. A family history of dyslexia led to testing to determine if learning disabilities were present. I.Q. testing was done at age 4 (Karl scored well above average), behavioral modification techniques were employed, and psychiatric testing was completed. After all of this information was compiled, and after numerous observations of Karl by a specialist, a diagnosis of ADHD was made. Karl's diagnosis was a long, labor-intensive process that was painful at times. Yet the kind of comment I hear most often when I tell a friend, colleague, or educator that Karl has ADHD is "That's an easy excuse/diagnosis for a kid's laziness/lack of discipline/bad behavior." If they only knew what we had been through to reach this diagnosis! A proper diagnosis should include all or most of these components to be sure that the child in question *truly* has ADD or ADHD.

### Medication and Treatment

There are two main classes of medication commonly used in the treatment of ADHD: stimulants and antidepressants. The stimulants dextro-amphetamine sulfate (of which *Dexedrine* is most frequently used) and methylphenidate (trade name: *Ritalin*) are probably the best-known medications. *Dexedrine* has been used in the treatment of ADHD since the 1930s; *Ritalin*, since the early 1960s. A less common stimulant, pemoline (trade name: *Cylert*) was introduced into the U.S. more recently.<sup>6</sup> George Dupaul and Gary Stoner comment on the use of these medications:

The most widely studied and cost-effective treatment for ADHD is the prescription of psychostimulant medication, such as *Ritalin* (methylphenidate). These medications can lead to improvements in on-task behavior, impulsivity, social behavior, compliance, and academic productivity in as many as 70%-80% of children with ADHD.<sup>7</sup>

When stimulant drugs are effective, they produce one of the most dramatically positive responses in psychiatry.<sup>4</sup> When *Dexedrine* was finally prescribed for Karl at the age of 4, we witnessed a miraculous transformation. His patience, attentiveness, fine motor skills, and behavior all improved dramatically. Karl was "like a different child." At the same time, we as parents were concerned about medicating such a young child

dosage. Ritalin and Dexedrine are both Class II amphetamines and are tightly controlled by the Food and Drug Administration. No refills are permitted, prescriptions cannot be called in by the physician, and the prescription is made out in triplicate so that it can be accounted for. Despite the effectiveness and safety of amphetamines when used properly, these drugs have acquired a bad reputation because of the adults who have abused them. But, as Paul Wender points out,

stimulant drugs have a much different effect on ADHD children than they do in normal adults. Rather than becoming high or excited, ADHD children are in general calmed down by these drugs, and sometimes (rarely) they may even become somewhat sad. Children do not become addicted to these medications; there is absolutely no danger that this will occur.<sup>9</sup>

The same neurological chemistry that makes the ADHD child highly distractible and impulsive prevents a typical reaction to these medications. The medication seems to compensate at a basic level for this difference in chemical makeup, affecting behavior in many diverse areas.

Of the antidepressants used to treat ADHD, desipramine (trade name: Norpramin) is the most commonly used be-

sants and ADHD has been done on this medication.<sup>10</sup> Desipramine belongs to a class of drugs called tricyclic antidepressants. Although it is a completely different medication, its effect on people with ADHD is similar to that of stimulants. Occasionally, when a stimulant will not work, this antidepressant will work — and vice versa.

Norpramin has several advantages over Ritalin and other stimulants. First, it can be given in a single daily dose; second, it does not produce the jagged peaks and valleys that some people experience on Ritalin; and third, it is not a controlled substance, so there is greater flexibility in prescribing it.

To determine the proper dosage, a child's weight and response to medication are taken into account. The smallest dosage possible is administered until a therapeutic level is reached. This level is determined by the child's behavior, as reported by his or her parents and teachers. Throughout the

child's medical treatment, the specialist will rely on the reports of those who have the most frequent contact with the child to decide whether or not to increase the medication. Parents and educators are also in the best positions to observe how long each dose lasts and to help the doctor determine the best spacing of doses. A typical dose of Ritalin can last from three to six hours, depending on the individual's chemistry.

PARENTS OF A  
CHILD WITH ADHD  
SHOULD RECEIVE  
INSTRUCTION IN  
BEHAVIOR  
MANAGEMENT.

Once a child's dose is fine-tuned, a schedule that works best at school and at home can be determined. If there are problems in both settings, the physician will recommend that the medication be given every day, every day, to give the child a break every so often from the medication is also recommended.<sup>11</sup>

### Drug Tolerance and Side Effects

As a child who has been on medication for several years becomes older and grows larger, he or she will require an increased dosage. Some children may develop a tolerance to one of the stimulant drugs. In such cases the physician may switch to another drug. If the development of drug tolerance continues to present a problem, the physician may switch to still another of the major categories of medication that are used.

The most frequently reported acute side effects of Ritalin and other stimulants are appetite reduction (particularly at lunch) and insomnia.<sup>12</sup> Other effects reported in the literature include increased irritability, headaches, stomachaches, and, in rare cases, motor and/or vocal tics.<sup>13</sup> At the age of 10, Karl developed a reaction/tolerance

to Dexedrine. Despite his medication three times a day, Karl became overactive and irritable, and his grades began to drop. He also developed an annoying and distracting habit of making loud clicking and screeching noises (vocal tics), a practice he was completely unaware of. At this point Karl had been on Dexedrine for nearly seven years, and our doctor recommended switching him to a comparable dosage of Ritalin. This change quickly eliminated the problems that had been caused by his tolerance for Dexedrine.

The decrease in appetite can result in retarded growth for some children, but studies have shown that the appetite returns in the evening after the drug has worn off. Appetite will also be normal at breakfast, before medication is given. Wender emphasizes that the effects that have been reported are small, and most physicians treating ADHD children feel that the psychological benefits outweigh the possible negative effects on the rate of growth.<sup>14</sup>

The tendency of Ritalin and other stimulants to keep some children awake can also be controlled by the timing of the medication. Eliminating a dose late in the day gives the medication time to wear off so that the child can sleep. If sleeplessness continues to be a problem, it can generally be handled by using pills instead of the long-acting (capsule or suspended re-

leased exercise can also help the child to relax and go to sleep more easily.

Some children may also experience other side effects from stimulant medications, such as obsessive-compulsive behavior, a proneness to crying, and anxiety.<sup>16</sup> By the age of 11, Karl was on the maximum dose of Ritalin for his height and weight (100 milligrams per day). At this level Karl began to wake up in the night crying. He worried about dying and started to develop motor tics and obsessive behaviors. I immediately scheduled an appointment with our specialist to determine what the problem was. She determined that Karl was suffering from side effects because of the level of Ritalin he was taking. She reduced his Ritalin prescription and added a dose of Norpramin to his drug therapy. Within several weeks (it takes a while for Norpramin to reach a therapeutic blood level), Karl was back to his "normal" self. Over the past year we have continued to fine-tune this dosage and have arrived at a level that seems to work well for Karl and allows

him to function at school and at home.

## Other Interventions for ADHD

Medication is not the whole treatment for ADHD. Although inattention and impulsivity can be effectively managed with the appropriate medications, they are not the only problems associated with the disorder: "Children with ADHD . . . may also exhibit difficulties in peer relationships, problems with commands and authority figures, and poor homework completion, study, and organization skills."<sup>17</sup> The scope of the disorder means that multiple strategies and interventions across the school and home environments are necessary to allow the child to be successful. It is important for parents of a child with ADHD to receive supportive instruction in behavior management techniques that are designed to enhance the child's attention to household tasks and rules.<sup>18</sup> The child's physician, school psychologist, counselor, or special education teacher may steer parents to the appropriate training or literature.

It is crucial that parents receive some guidance regarding their reading about ADHD, as there are many "pop psychology" books, not based on current research, that can create confusion about the treatment and education of the child. One example of such literature would be Ben Feingold's *Why Your Child Is Hyperactive*, which theorizes that ADHD is caused by allergies to artificial colorings and preservatives in food.<sup>19</sup> However, according to Wender,

All the carefully conducted controlled studies — in which the family did not know whether or not the child was on an additive-free diet — have shown that one type of additives (the artificial food colorings) does not produce significant hyperactivity (though it may produce some minor changes in attention in some children).<sup>20</sup>

Wender's own book, *The Hyperactive Child, Adolescent, and Adult*, and his more recent volume, *Attention Deficit Hyperactivity Disorder in Adults*, offer educators and parents objective, accurate, insightful information based on research in the field.<sup>21</sup>

By the time they reach late adolescence, approximately 63% of students with ADHD will have received an average of 16 months of individual psychotherapy.<sup>22</sup> ADHD is not considered to be an emotional distur-

bance, and parents and educators should not expect counseling alone to alleviate core symptoms. However, counseling can help children deal with the emotional difficulties often associated with ADHD, such as low self-esteem, and thus it can be a valuable component of a comprehensive treatment plan.

## Schools and Parents Working Together

Dupaul and Stoner offer the following advice.

When education professionals are involved with children diagnosed with ADHD, their primary professional responsibility must be to promote the child's learning and achievement. In addition, because the diagnosis and treatment of ADHD nearly always involve pediatricians, psychiatrists, and clinical psychologists, collaborative efforts at assessment and treatment will need to be developed and maintained.<sup>23</sup>

Let me add parents to this list of collaborators. From my standpoint as a parent, the most important gift that educators can give my ADHD child is understanding. The most important gift that they can give me is regular, open communication. These two "gifts" allow the parent(s), the ADHD specialist, and the ADHD child to frequently assess educational and emotional progress as well as medical needs. Organized conferences, informal school visits, telephone calls, log books, notes, newsletters, and report cards are all viable means of communicating progress (or lack thereof) to ADHD children and their parents.

School psychologists, teachers, and administrators can all help to promote parent involvement in activities that are likely to foster the ADHD child's learning and achievement. An important key to success for the disorganized ADHD child is for parents to monitor the child's assignments and make sure that homework is completed.

For successful treatment of ADHD, it is imperative that the teacher understand what ADHD is and know how to work with ADHD children in the classroom. To assist teachers, Edward Hallowell and John Ratey have put together a list of 50 tips on classroom management of ADHD children.<sup>24</sup> After advising teachers to "Make sure what you are dealing with is really ADHD," they offer specific strategies, such

as "Break down large tasks into small tasks," "Try to use daily progress reports," and "Repeat directions, write them down and speak them, repeat directions!" Most of the suggestions have to do with simple skills that are often taken for granted when working with "regular" students but that can be very difficult for the ADHD child. As a parent and educator who has spent the last 10 years struggling to assist an ADHD child and working within the education system, I find this an excellent list for teachers.

Although the challenges facing an ADHD child can seem overwhelming, there is now a sizable body of helpful and sound literature on the disorder. It is my hope that this article has provided readers with a useful perspective and steered them to additional sources of reliable information. If everyone involved in a child's schooling is armed with such information, that child will have far greater opportunities for educational success.

1. Steven W. Garber, Marianne D. Garber, and Robyn F. Spizman, *Is Your Child Hyperactive? Inattentive? Impulsive? Distractible?* (New York: Villard Books, 1995).

2. Edward M. Hallowell and John J. Ratey, *Driven to Distraction: Recognizing and Coping with Attention Deficit Disorder from Childhood to Adulthood* (New York: Simon & Schuster, 1995).

3. Gary J. Dupaul and George Stoner, *ADHD in the Schools: Assessment and Intervention Strategies* (New York: Guilford Press, 1994), p. 3.

4. *Diagnostic and Statistical Manual of Mental Disorders*, 3rd rev. ed. (Washington, D.C.: American Psychiatric Association, 1987).

5. Hallowell and Ratey, p. 42.

6. Paul H. Wender, *The Hyperactive Child, Adolescent, and Adult: Attention Deficit Disorder Through the Lifespan* (New York: Oxford University Press, 1987), p. 59.

7. Dupaul and Stoner, p. 16.

8. Wender, p. 61.

9. *Ibid.*, p. 60.

10. Hallowell and Ratey, p. 240.

11. Wender, p. 65.

12. Dupaul and Stoner, p. 151.

13. *Ibid.*

14. Wender, p. 68.

15. *Ibid.*, p. 67.

16. Dupaul and Stoner, p. 151.

17. *Ibid.*, p. 171.

18. *Ibid.*, p. 188.

19. Ben Feingold, *Why Your Child Is Hyperactive* (New York: Random House, 1975).

20. Wender, p. 77.

21. Paul H. Wender, *Attention Deficit Hyperactivity Disorder in Adults* (New York: Oxford University Press, 1995).

22. Dupaul and Stoner, p. 151.

23. *Ibid.*, p. 203.

24. Hallowell and Ratey, pp. 245-53.

K

# Teaching Tommy

## *A Second-Grader with Attention Deficit Hyperactivity Disorder*

BY KATHARINA FACHIN

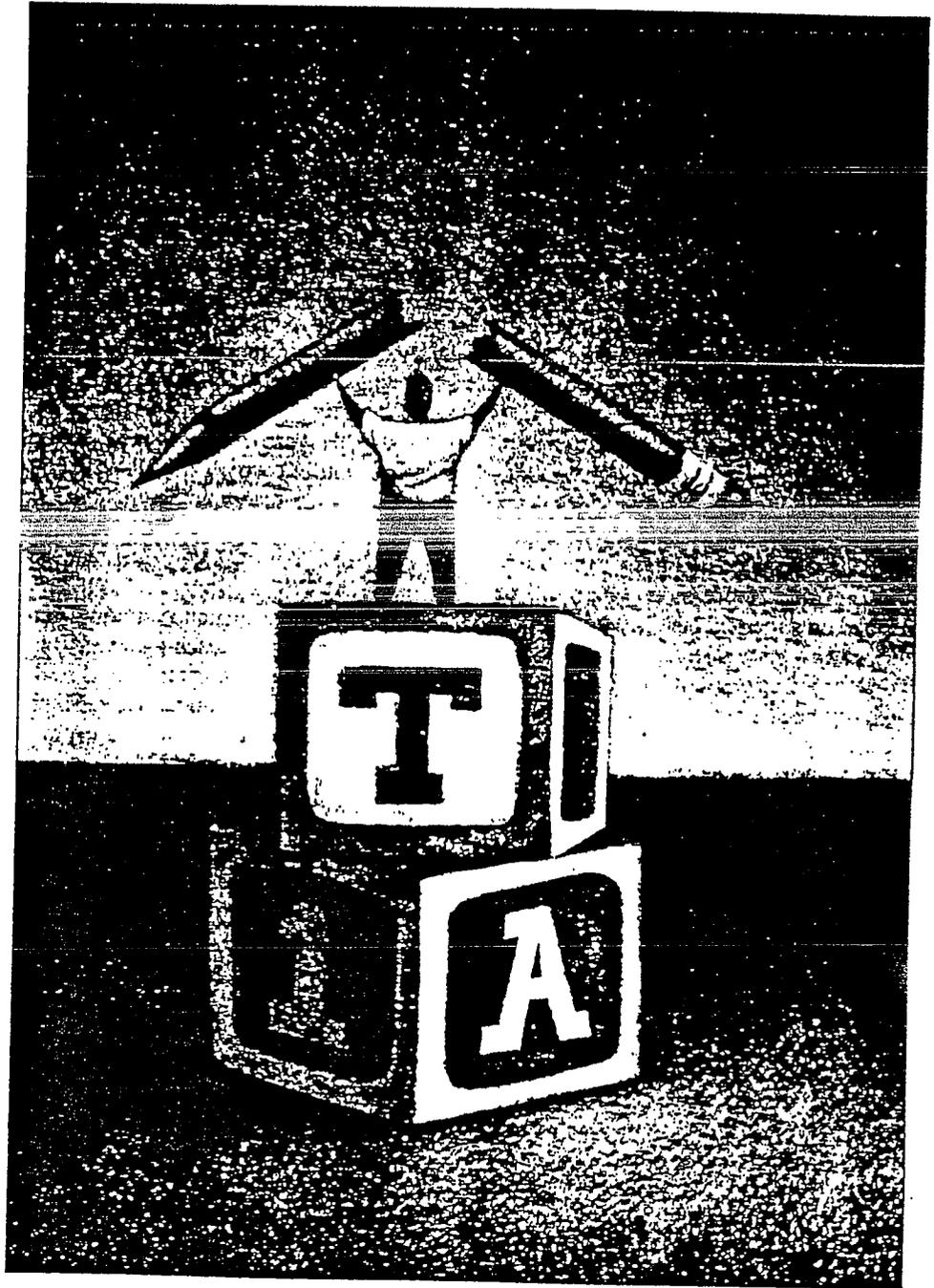
*Ms. Fachin sees medication as a last resort and believed that Tommy's difficulties could be managed with a comprehensive behavioral and academic program. But, despite her arsenal of classroom interventions, Tommy needed something more.*

**W**HEN TOMMY walked into my second-grade classroom on the first day of school, I was happy to see a familiar face. I looked at him with sympathy and hope, wanting to make the year one of learning and of building self-esteem.

Tommy was coming to my class with a difficult year behind him. He had spent first grade in a highly structured classroom, and he had not conformed to its behavioral standards. The behavior modification used with him in that class had included the removal of rewards, and Tommy had experienced little success in keeping the rewards

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# I COULDN'T UNDERSTAND WHY A TEACHER WOULD BE SO NEGATIVE ABOUT HANDLING TOMMY IN THE CLASSROOM. OVER THE COURSE OF THE NEXT YEAR, I FOUND OUT WHY.

he earned. He was often in trouble, and everyone in the school knew his name. He was three-fourths of a year behind his peers in reading and writing. These experiences led Tommy to believe that he was stupid and bad. I was determined to replace his negative self-image with a positive one based on academic and social success.

Tommy and I already had a history before that first day of school, for I had tutored him once a week from May through July. Originally, Tommy had qualified for home tutoring because of a myringotomy and an adenoidectomy. In preparation for teaching Tommy at home, I talked to his first-grade teacher to find out about his capabilities and to see if she could recommend any materials. I was disappointed when I talked to her because she seemed so negative about him, yet she lacked any precise descriptions of his learning. I met Tommy with the impression that he had had a tough break — a little child facing a teacher who had no hope in him and who lacked the flexibility to meet his needs. Tommy's mother reaffirmed this impression when she described how the teacher wanted him tested and how she was afraid that they just wanted to drug her child so he would be easier to handle.

Tommy snacked on cupcakes and soda as we worked at the kitchen counter. The phone would ring, and siblings would be preparing to go to after-school activities. Tommy wiggled and slid about on the chair, and he would often take bathroom breaks. By remaining firm, I was able to get Tommy to read and write with me. We talked about his interests, and I got to know him. He had a very limited sight vocabulary and could not predict vowel sounds. He could identify most consonants but could not identify the correct vowels, nor was he familiar with how to spell common endings. Although Tommy did not like to read and write because it was such a struggle, he loved math. Using his fingers, he could calculate all first-grade-level addition and subtraction problems quickly and accurately.

ly. Tommy felt very confident of his mathematical abilities.

I became attached to this rough-and-tumble boy with the blue eyes and the big smile. He told me about his daredevil biking stunts and about jumping out of tree houses. Grass stains on his jeans, scrapes on his knees and elbows, and dirty hands were his hard-won war wounds. Tommy struck me as very inquisitive. He spoke of such experiments as creating a pocket of air under water with a bucket. I wondered how I could tap into his creativity in the classroom. Tommy was a very active boy who had trouble maintaining eye contact and concentration, but I attributed these characteristics to his personality, immaturity, diet, and environment. I couldn't understand why a teacher would be so negative about handling him in the classroom.

Over the course of the next school year, I found out why. But I also discovered the joys of teaching Tommy.

## Second Grade

Because of my experience tutoring Tommy and my hands-on teaching style, Tommy was placed in my class for second grade. By the third day, I had contacted Dr. Mitchell, our school psychologist. Tommy was singing and making loud noises throughout lessons. He crawled on the floor during transitions and sometimes even during class. As he laughed and shoved his way through the class to line up, he injured other children. He was playful and destructive at the same time. Instead of picking up the blocks when it was time to clean up, he would scatter them wildly with flailing arms and a big grin. Just when a bucket was filled with blocks, Tommy would dump it.

Throughout that first month I used "time out" with Tommy and had him write about his behavior — to no avail. Positive reinforcement, coupled with ignoring Tommy as a negative consequence, also did not increase Tommy's on-task behavior. In-

deed, the research shows that these methods are commonly insufficient for children with Attention Deficit Hyperactivity Disorder (ADHD). I think that ignoring Tommy not only didn't work to improve his behavior but was actually harmful to him. When I made it clear that I was ignoring him, he would feel unloved and bad about himself. On one occasion Tommy curled up in fetal position behind the computer. I had to be careful to let him know that I loved him and believed that he was a good and smart boy. When he needed to be reprimanded, I used a firm monotone voice to correct him succinctly. Still, I felt I had to find a way to help Tommy achieve more success in school.

## Token Economy

At the suggestion of Dr. Mitchell, I instituted a token economy system of rewards for Tommy. Tangible rewards coupled with positive verbal reinforcement have been shown to be much more effective than praise alone.<sup>2</sup> From the very beginning, though, Dr. Mitchell made it clear that I needed to document Tommy's behavior. In late September I explained the program to Tommy and then later to his mother over the telephone. He could earn play money in \$5 bills for raising his hand, keeping his hands to himself, and being a model student. I would not take away any money that he earned. We would count it up at the end of the day and chart it. At the end of the week, Tommy could use the money to purchase time on the computer, time to play with the math manipulatives, or time for drawing in his journal.

As soon as the system was in effect, Dr. Mitchell observed Tommy in the classroom and charted his behavior at one-minute intervals for 30 minutes. Tommy was out of his seat 76.6% of the observed time, he rolled on the rug 16.6% of the time, and he spoke out of turn 63.3% of the time. Moreover, he exhibited aggressive behavior toward property or individuals 26.6%

of the time. For example, he crushed some science material on a shelf, and he also tried to throw an object. Only 3.3% of the time were Tommy's eyes on the teacher while he listened and followed directions. For 86.6% of the time Tommy exhibited excessive or incidental movement, and he was off-task 93.3% of the observed time.

Dr. Mitchell called a meeting that included Tommy's father, Dr. Mitchell, the acting principal, and me. I offered specific examples of Tommy's impulsivity, distractibility, and motoric overflow. His father was upset when he heard about Tommy's behavior and acknowledged that he had wanted Tommy tested last year. He even supported the idea of the token economy and said he would have Tommy use his classroom money to purchase television time, dessert, and video-game time at home. In the coming months Tommy's father very consistently reinforced the token economy at home and signed the papers for Tommy to be tested.

When we began the token economy in September, Tommy averaged \$18 a day for the remainder of that month. During October, he averaged \$27 a day, with \$10 as the lowest amount and \$65 as the highest. For November Tommy averaged \$31 a day, with a range from \$5 to \$110. During

a range from \$15 to \$105. With his parents' support for the system at home and Tommy's own interest in the token economy, I was pleased with the improvement.

Although Tommy was somewhat less disruptive, he would still step on other children as we sat on the rug, make intermittent loud noises, call out to other children, fall out of his chair on purpose, and get up from his desk during lessons. When we used blocks for mathematics, he would play with them and knock them off his desk unless I remained right beside him. If he raised his hand and I didn't call on him immediately, he would get angry and within a minute would be off task. His pencil and notebook could be found anywhere in the room but inside his desk. The situation was most difficult during whole-class times and transitions.

On the other hand, Tommy wanted very much to please me, and he would write me apologies and notes about how he loved me. After the fact, he felt bad about hurting other children and disrupting the class, so I tried to show him affection at every good opportunity.

Despite these difficult times, Tommy also showed his potential to succeed in school. Three days a week for 45 minutes, my instructional support teacher, Mrs. DeVito, worked with Tommy in a small reading group while I worked with two other groups. The fit between Mrs. DeVito's teaching style and Tommy's needs was perfect. Mrs. DeVito enthusiastically and dramatically offered her students positive reinforcement, and Tommy would glow from her praise. She also used a fast-paced, question-and-answer format for lessons that would not allow Tommy to lose focus. He looked forward to his time with Mrs. DeVito and showed great progress in reading. His sight vocabulary and word-attack skills were improving steadily.

### ADHD as a Motivational Disorder

This disparity between Tommy's highly distractible and impulsive behavior during whole-class activities and his focused and appropriate behavior in the small reading group was very disconcerting for me. Throughout the year I analyzed and reanalyzed my teaching. I too am a lively and interactive teacher who uses a variety of visual and tactile methods. I made modifications for Tommy so that he could take stand up while working. I reorganized the classroom so that he was surrounded by calmer children and was seated directly in front of me as I taught. Why couldn't I achieve the same attending behavior as Mrs. DeVito could?

Russell Barkley explains this discrepancy in behavior by characterizing ADHD as a motivational disorder.<sup>3</sup> A child with ADHD can attend well in a highly motivating situation, such as while watching a favorite television program or playing a video game. When the situation is less intrinsically motivating or when there is delayed rather than immediate feedback, the child will display the characteristics of ADHD. This is why the token economy was somewhat successful during whole-class times when Tommy would not be called on as frequently as in a small group.

After seven months, Tommy continued to exhibit frequently every one of the 14 characteristics that the American Psychiatric Association lists as diagnostic criteria for ADHD. (For a list of these characteristics and a brief description of how they can be used in diagnosis, see Anna

M. Thompson, "Attention Deficit Hyperactivity Disorder: A Parent's Perspective," page 433, this *Kappan*.)

### Interventions

At the classification meeting in December, I found out that Tommy was classified as perceptually impaired because of the discrepancy between his general cognitive ability and his specific achievement in reading and language arts. Although the neurologist had diagnosed Tommy as exhibiting ADHD, this condition was not included in his individualized education program (IEP) in January because the psychologist explained that there was no separate classification in education for ADHD. In January 1995 an IEP was written that allowed Tommy three half-hour sessions in the resource room for language arts and provided an in-class aide each day from 1:30 p.m. to 2:30 p.m.

*Resource room.* The resource room teacher, Miss Steven, focused on Tommy's spelling. She created an individualized list for him using words from the Dolch list as well as words that exhibited a regular spelling pattern. She scrambled the letters in the words for him to correct, asked him to write his homework sentences in the resource room, and let him write words with colored glue on cards. Using the glue was very motivating for Tommy. When it dried, Miss Steven instructed him to trace over it with his finger. The success of this use of colored glue is consistent with research that suggests that ADHD students "selectively attend to novelty such as color, changes in size, and movement."<sup>4</sup> Tommy went from getting at least 50% wrong on every spelling test to getting all but one word correct. His journal writing also reflected this change.

*In-class aide.* Tommy was assigned an aide, Mrs. Hellwell, in the last week of February. I gave Mrs. Hellwell a list of appropriate behaviors, inappropriate behaviors, and interventions. She reinforced Tommy's appropriate behavior and provided one-on-one tutoring in the classroom. When he was highly disruptive, she also provided alternative activities. At the end of the day, Mrs. Hellwell monitored Tommy as he counted and charted his earned money. This was a tremendous help to me because it was simply exhausting to manage Tommy and the token economy all day while trying to teach and pay attention to the needs of the

rest of the class.

To help with transitions, particularly the transition from lunch recess to afternoon classroom activities, I employed relaxation techniques.<sup>5</sup> I walked the children in from the school yard and asked them to sit at their desks. One row at a time, I called them to lie or sit on the rug. (This usually helped keep Tommy from stepping on anyone.) Then I turned out the lights and talked the children through a breathing exercise; cued them to tense, hold, and relax their muscles; and used guided imagery of peaceful places and activities. Sometimes I encouraged them to think of themselves doing something challenging and achieving success.

At first Tommy wouldn't hold still for these techniques, so I began to sit knee to knee in front of him on the floor as I led the class. After some experience with relaxation, he gradually became able to participate without my sitting with him. As I led the class from a chair, I could see him following my cues for breathing in and out and witnessed his body growing still. Tommy also displayed some enthusiasm for the practices. One day, after I asked

the children to try thinking of their own images of succeeding, Tommy told us about how he imagined himself winning a karate match he was nervous about that evening. My long-range goal was to be able to suggest to Tommy that he use the techniques on his own during the day to relax himself. As we walked down the hall, I would say to him, "Tommy, do you notice how you are making loud noises or knocking into the walls? Try breathing like we do after lunch. Can you breathe in a color?" Sometimes he used my suggestions independently, and sometimes I had to take the time to help him use the techniques before we continued walking.

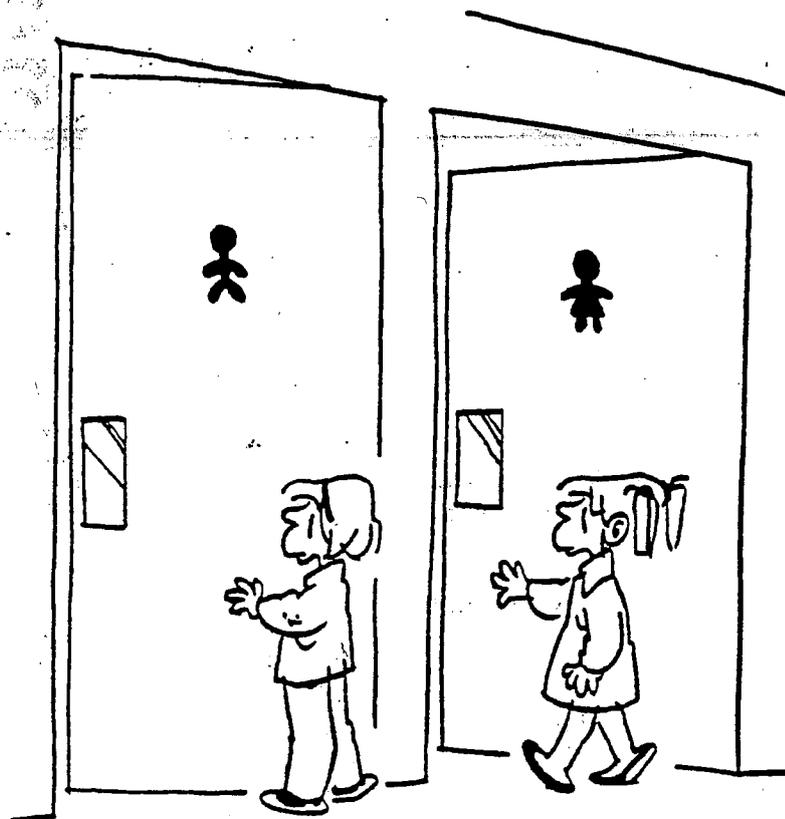
*Peer tutoring.* At the beginning of the year, the other children in the class thought Tommy was funny and enjoyed his darning and his flouting of classroom rules. Then they became jealous of the extra attention he got from me and tried to imitate his behavior or to win my attention in other ways. Eventually, though, they began to grow angry with him for hurting them or for not waiting his turn or for disrupting class. I felt I had to find a role for the other children in the class.

All through the year I had talked to the whole class about how I was responding to Tommy and had discussed how everyone should act and why. One day, Tommy pulled a chair out from another child, causing her to hit her head hard as she fell. He stared in horror as she cried. A couple of days later, I talked about how we sometimes think of our conscience as a devil on one shoulder and an angel on the other. Tommy called out, "I think my devil killed my angel," and "I'm evil." I asked, "How did you feel when Susan hit her head? A bad person would not feel sad. You have an angel. It just talks to you too late. We need to teach your angel to give you advice before you do something." I had never seen such a look of relief and peace on Tommy's face. I could have cried.

Then I was able to enlist the help of the other students. Each day, a different student, alternating boys and girls, would be a peer tutor and help Tommy's angel "talk." I got an empty desk to put next to Tommy's for his peer tutor. I coached the peer tutor to remind him of proper classroom behavior in a nice way, to set a good example, and to accompany him when he used his money for rewards. Attitudes toward Tommy improved as the other students saw themselves as his helpers and saw Tommy as not a bad kid. Of course, not every match worked, and the boys especially found it difficult not to incite Tommy's off-task behavior and then to goof off with him.

*Modifying the behavior modification.* After using the token economy for five months, I felt as if Tommy was hitting a plateau. His behavior in whole-class situations was still unacceptable. I decided to buy a digital timer to help him set goals. I would set the timer for five minutes, and he could earn \$5 only if he raised his hand before speaking and generally acted appropriately for the full five minutes. I discovered that he tried very hard but could make five minutes only about 60% of the time. He never made it to six minutes.

It was February, and Tommy was getting into a lot of trouble on the bus and during recess. He often found himself in the principal's office. His mother was being called every day. I had tried so hard, and yet his year in my class was turning out just like the previous year. The art and physical education teachers came to me out of frustration about his behavior, and we talked about assertive discipline and



Campbell

# MORE PAINFUL THAN THE FRUSTRATION OF TRYING TO DEAL WITH THE CONDITION OF ADHD ITSELF IS ENDURING THE CRITICISM THAT COMES FROM OTHERS.

about ways to manage Tommy. In a letter to Dr. Mitchell, they expressed their concerns about how Tommy was detracting from the learning experiences of the other students in the class.

**Changing placement.** What else could we try? Dr. Mitchell said that our last resort would be to explore different placement options for Tommy next year. A regular classroom might be inappropriate. Since our district did not have a special education classroom, that would mean an out-of-district placement. Based on my feelings of loyalty to Tommy and his parents, I asked that I be the one to discuss this with his parents.

I called Tommy's father at the beginning of March and described the situation. I told him that we needed to explore other school placement options if Tommy's behavior did not change. During our telephone conversation I also mentioned that perhaps he and his wife might reconsider taking Tommy to his private school.

We met two weeks later at parent/teacher conferences to discuss the situation in more depth. I came to the meeting with a prepared presentation detailing Tommy's behavior, the interventions that had been tried, an analysis of his progress, and the options for the future. Tommy's father informed me at that time that they would be taking Tommy to the pediatrician to try medication. They had already reached a decision before our meeting.

**Medication.** Tommy was on Ritalin for the last month of school. For five days he would take a dose of five milligrams before school, and it would wear off around noon. The first day he was on the medication, he earned the most money he had ever earned in a day, \$110. He behaved appropriately for 15-minute intervals. He never lost his sense of humor or energy or bubbiness.

The difference was remarkable. I would see him begin to call out and then stop himself to raise his hand. He would set the timer and look at it to monitor himself. All his behaviors seemed to indicate that

he was more receptive to reinforcers. The entire class responded to Tommy with spontaneous encouragement and praise, though they didn't know he was taking medication. On the first day, one beaming student told me, "This is such a good day!" Tommy was riding so high from the morning that his general sense of feeling good about himself helped him make it through the afternoon. Although he would lose his pencil constantly in the afternoon and rush from one thing to another, he tried successfully to follow classroom rules.

Even on the medication, though, the daily variation in Tommy's behavior remained. Some days he was simply more active than others. For example, on the third morning after he began taking medication, Tommy was still shaking his leg and foot the whole time he was leading the pledge.

Every day I talked to his father after school on the phone to inform him of Tom-

my's success. He said that he would contact the pediatrician about an afternoon dose.

Tommy continued until the end of the school year with both a morning and an afternoon dose of Ritalin. There were days when I questioned whether or not he was given the dose before he came to school, but I didn't voice these concerns. We also had some difficulty establishing exactly when the second dose should be administered, and I had difficulty remembering to send him to the nurse's office before he exhibited severe off-task behavior.

I do not mean to argue for the use of medication to address the needs of all ADHD students. I see medication as a last resort and one that should be used in combination with a comprehensive behavioral and academic program. I offered Tommy an activities-based curriculum to tap into his energy and creativity. I taught abstract ideas concretely and contextually. I consistently used and adapted behavior modification

techniques and tried other techniques like relaxation exercises. I let Tommy know that I thought he was a great kid and a talented person, too. I had the class support Tommy as peer tutors and as members of project teams, literature study groups, and cooperative learning groups. The district provided instructional and noninstructional support. But Tommy needed something more to enable him to benefit from these interventions. Tommy's ADHD was severe, and the medication helped him achieve success in the classroom.

From my experience with Tommy and his family, I have come to believe even more strongly that it is vital to gain the trust of parents. Their faith in our efforts and concern for their child must be the basis for communication and teamwork between home and school. I also realize how painful it can be for parents to accept that their child might need extra help and even medication.

By fielding inquiries about Tommy's behavior, I got a small taste of what parents must feel when they are told by friends, family members, and doctors that they don't know how to discipline their children. More painful than the frustration of trying to deal with the condition of ADHD itself is enduring the criticism and condemnation that come from others. I think that this holds true for the student, the parents, and the teacher.

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