

Gestalt Imagery: A Critical Factor in Language Comprehension

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Gestalt imagery—the ability to create imaged wholes—is a critical factor in oral and written language comprehension. Despite good decoding, good vocabulary, and adequate background experiences, many individuals experience weak gestalt imagery, thus processing “parts” rather than “wholes,” from verbal stimuli, spoken or written. This contributes to a Language Comprehension Disorder that may be accompanied by a commonality of symptoms: weak reading comprehension, weak oral language comprehension, weak oral language expression, weak written language expression, difficulty following directions, and a weak sense of humor. Sequential stimulation using an inquiry technique develops gestalt imagery and results in significant improvement in reading comprehension.

For years educators have studied reading and discussed and disputed reading efficiency in terms of primary strategies, such as the “context effect” and vocabulary, phonological segmentation and word attack, and word recognition. Yet, none of these strategies guarantees the critical skill of language comprehension.

Language comprehension is the ability to connect to and interpret both *oral* and *written* language. It is the ability to recall facts, get the main idea, make an inference, draw a conclusion, predict/extend, and evaluate. It is the ability to *reason* from language that is heard and language that is read. It is cognition.

Unfortunately, my clinical research suggests the existence of a specific Language Comprehension Disorder. This comprehension disorder underlies the reading process and goes beyond use of context, phonological processing, word recognition, vocabulary, prior knowledge, and background experience. It is a disorder in the comprehension of both oral and written language. It may be separate from a decoding disorder. It may be separate from a phonological processing disorder. It may be separate from a vocabulary disorder. However, it can be diagnosed and it has a cause and symptoms. It is a serious cause for concern in the field of reading.

The Imaged Gestalt

A Language Comprehension Disorder is based in the sensory system and is a weakness in creating a *gestalt*. Gestalt is defined as a complex organized unit or whole that is more than the sum of its parts. The whole may have attributes that require a certain function for each part in the whole; these attributes are not deducible from analysis of the parts in isolation. In the case of a language comprehension disorder, the weakness is creating a gestalt interferes with the *connection to* and *interpretation* of incoming language.

For many individuals gestalts are not easily or successfully processed. Instead, “parts,” bits and pieces, facts and details, dates and names are processed but not the entirety of the concept. Individuals describe the phenomena as, “the words go in one ear and out the other.” A high school student commented on his reading, “It is words man...just words.” A university graduate described listening to a lecture, “It is like the language was written on a blackboard and someone was going behind and erasing it, and I only got parts”—not the gestalt.

And the gestalt is the issue. The only reason to read or listen to language—take in verbal stimuli—is to get meaning, to comprehend, to interpret, to reason. The gestalt is a prerequisite to interpretation and reasoning. For example, the main idea cannot be discerned if only a few “parts” have been grasped. An adequate inference cannot be determined or an accurate conclusion drawn from “parts.” The gestalt is the entity from which the interpretive skills of identifying the main idea, inferring, concluding, predicting, extending, and evaluating can be processed. It enables the reader or listener to bring meaning—deep structure—to what is read or heard. It is an integral part of cognition.

The critical nature of the gestalt then requires us to answer the question: How does one create the gestalt? An answer: The gestalt is created

by the visualization of a whole. *Gestalt Imagery is the ability to create an imaged whole.* “Readers or listeners construct mental models of the situation a writer or speaker is describing. This is the basis of language comprehension” (Bower & Morrow 1990). Kosslyn (1983), “A number of great thinkers, most notably Albert Einstein, professed to rely heavily on imagery in their work. Consider these words of Einstein: ‘The psychical entities which seem to serve as elements of thought are certain signs and more or less clear images which can be “Voluntarily” reproduced...this combinatory play seems to be the essential feature in productive thought—before there is any connection with logical construction of words or other kinds of signs which can be communicated to others.’”

Imaging is a sensory link. Gestalt imagery connects us to incoming language and links us to and from prior knowledge, accesses background experiences, establishes vocabulary, and creates and stores information in both long term and short term memory. Researchers in reading and imagery have produced direct evidence linking reading and mental imagery and have studied the relationship of imagery to prior knowledge and thinking processes (Kosslyn 1983; Levin 1973, 1981; Marks 1972; Paivio 1971, 1986; Peters & Levin 1986; Pressley 1976; Richardson 1969; Sadoski 1983; Sheehan 1972; Stemmler 1969; Tierney & Cunningham 1984). Vivid gestalt imaging may even be considered a “vicarious experience.”

My clinical research, identifying imagery as critical and basic to language comprehension, began almost ten years ago with a remark made by a college student. He had extraordinary language recall and interpretation and described his processing as, “I make movies when I read.” He verbalized creating mental images and using the images for recall, interpretation, and reasoning. Further inquiry with individuals noted that good comprehenders reported good imaging and poor comprehenders reported weak imaging. And, more important, exploratory stimulation of imagery resulted in substantial gains in comprehension.

Historical Perceptive

Though empirical research can be convincing, there is considerable evidence in the fields of both cognitive psychology and reading that support imagery as a critical factor in language comprehension. Thus, before proceeding further, it is important to note some of the historical perspective regarding the relationship between imagery and cognition.

Imagery as related to memory has been discussed since Aristotle. He stated, "It is impossible even to think without a mental picture...memory or remembering is a state induced by mental images related as a likeness to that of which it is an image" (1972). Moving to modern times, Jean Piaget (1936, cited by Bleasdale 1983) wrote in favor of a perceptual base to memory. According to Piaget, knowledge structures, or schemata, are acquired when the infant actively manipulates, touches, and interacts with the environment. As objects are manipulated, sensory-motor schemata are developed and changed to accommodate new information. Over time, schemata become internalized in the form of imaged thought. Piaget stated, "It is clear that imaginal representations are not formed with the same facility in each case, and that there is therefore a hierarchy of image levels, which may correspond to stages of development...The evolution of images is a kind of intermediate between that of the perceptions and that of the intelligence."

Proceeding chronologically to examine some of the more interesting research and historical commentary, Arnheim (1966) wrote, "Thinking is concerned with the objects and events of the world we know...When the objects are not physically present, they are represented indirectly by what we remember and know about them. In what shape do memory and knowledge deliver the needed facts? In the shape of memory images, we answer most simply. Experiences deposit images." He quoted the psychologist Edward B. Titchener, "...my mind, in its ordinary operations, is a fairly complete picture gallery,—not of finished paintings, but of impressionist notes. Whenever I read or hear that somebody has done something modestly, or gravely, or proudly, or humbly, or courteously, I see a visual hint of the modesty or pride or humility." The *visual hint* may be a means of processing abstract material. Continuing in the sixties, Allan Paivio (1969), who has written extensively on imagery and cognition, stated, "As every psychologist knows, imagery once played a prominent role in the interpretation of associative meaning, mediation, and memory. It was widely regarded as the mental representative of meaning—or of concrete meaning at least. William James, for example, suggested that the static meaning of concrete words consists of sensory images awakened [1890]."

The seventies brought further illumination from Paivio (1971). He has been attempting to demonstrate the way in which imagery can affect the acquisition, transformation, or retrieval of different classes of information. His dual coding theory for cognition defines imagery (usually visual imagery) as one of two types of cognitive code. The other type is verbal code. Paivio suggested that linguistic competence and performance are based on a substrate of imager. Imagery includes not only static

representations of objects, but also dynamic representations of action sequences and relationships between objects and events. Pribram (1971) stated, “Recently the importance of the Image concept has started to be recognized: cognitive psychologists analyzing the process of verbal learning have been faced with a variety of Imaging processes which demand neurological underspinnings...Neurological research, as well as insights derived from the information-processing sciences, have helped make understandable the machinery which gives rise to this elusive ghost-making process.” He further hypothesized that “*all* thinking has, in addition to sign and symbol manipulation, a holographic component.” Also in the seventies, Kosslyn (1976) conducted a developmental study on the effects and role of imagery in retrieving information from long-term memory. In two blocks of trials, first graders, fourth graders, and adults were asked to determine whether or not various animals are characterized by various properties, first upon the consultation of a visual image and then without imagery. He reported that imagery provided more opportunity for retrieval.

The eighties gave us additional evidence when Linden and Wittrock (1981) stated, “Reading comprehension is the generation of meaning for written language...We found that reading comprehension can be facilitated by several different procedures that emphasize attention to the text and to the construction of verbal or imaginal elaborations.” In a study with fourth graders, compared with a control group of students given the same time to learn with the same reading teacher, he noted, “the generation of verbal and imaginal relations or associations between the text and experience increased comprehension approximately by fifty percent.” Further research was conducted by Oliver (1982) with three experiments to determine if an instructional set for visual imagery would facilitate reading comprehension in elementary school children. He concluded, “These findings indicate that teachers should try to help children develop the metacognitive skill of visual imagery as a strategy for improving comprehension...Visualization enhances comprehension.”

And finally, 1989 provided the research of Long, Winograd, and Bridge. They summarized their findings regarding imagery and reading: “Our results suggest that imagery may be involved in the reading process in a number of ways. First, imagery may increase the capacity of working memory during reading by assimilating details and propositions into chunks which are carried along during reading. Second, imagery seems to be involved in making comparisons or analogies—that is, in matching schematic and textual information. Third, imagery seems to function as an organizational tool for coding and storing meaning gained from the reading.”

Symptoms of Gestalt Imagery Weakness

Although imagery has been viewed with prominence in learning theory, two problems exist: 1) the ability to image gestalts has been assumed, and 2) gestalt imagery is not readily available to many individuals. First, we do appear to have assumed imagery processing, or else we would have placed imagery in the curriculum to develop language comprehension in the classroom. Second, many individuals have weak gestalt imagery that creates a commonality of symptoms, ranging from mild to severe. Individuals often display one or all of the following symptoms, with poor reading comprehension as the most evident.

For example, as stated earlier, during and after reading (either aloud or silently), individuals experience only processing “parts” of what has been read. Thus, they often reread material numerous times in order to understand it. They experience difficulty accessing and integrating old information with new, and although their vocabulary may be very good for isolated words, they have difficulty bringing the words together to form imaged gestalts.

Anecdotal references often serve to clarify theory. The following individuals all experienced difficulty imaging gestalts. A college graduate with good decoding and above average intelligence, attempting to enter medical school, described his comprehension disability as “not having a cognitive tool kit...I opened up my cognitive tool kit and there was something missing. Others seems to do this [comprehend] very easily. I could never understand how they did it and why I couldn’t...About 20 percent of what I took in stayed and about 80 percent went out or was just parts.” Another college student, again with good vocabulary and good decoding, but on academic probation described, “There wasn’t one thing I could do right. I didn’t remember anything I read. It was very frustrating. I read each sentence three times and then went on to the next sentence and read it three times. It didn’t make any sense put together...if I read the information enough times I could remember it for maybe 30 seconds and then I had no clue.”

Another common symptom is *weak oral language comprehension* and the same “parts to whole” problem exists. Individuals connect to parts in a conversation, parts in a lecture, parts in a movie, and parts in their thinking processes. They have difficulty responding relevantly and thinking logically. They often ask and re-ask the same question and may be labeled as poor listeners or inattentive. A teacher said that she always sat in the front row in college class or at a professional conference in order to “try and keep in the

information from going past me.” A husband complained because his wife, who was a college graduate, asked and reasked the same question. Unaware of her repetition, she simply rephrased the same question a little differently each time. He explained that she didn’t grasp the essence of his answer or of conversation in general.

The oral language comprehension weakness is often accompanied by an *oral language expression weakness*. Individuals experience difficulty organizing their verbalization, expressing themselves easily and fluently, or they are verbal but scattered, relating information out of sequence. For example, a student on academic probation, with severely impaired reading comprehension, frequently interjected irrelevant comments in conversation. His comments were disjointed both unto themselves and to the topic. Consequently, he was often viewed as mentally disabled. After gestalt imagery stimulation was nearly completed, he explained that previously he had desperately wanted to participate in conversation but was only able to comment on the “parts” he was able to grasp, so, he blurted out irrelevant comments.

Weak written language expression is often another symptom. Though spelling and punctuation skills appear intact, written may lack preciseness, organization, and specifics, and be described as several essays, rather than a coherent whole written topic. Additional symptoms include *difficulty following directions, difficulty judging cause and effect, and a weak sense of humor*.

Causes and Contributors

The causes of gestalt imagery—language comprehension—disorder are puzzling. Perhaps it is a hereditary factor, since usually one or both parents present a similar deficiency. Perhaps a genetic basis for weak gestalt imagery will eventually be isolated. Perhaps with the advent of more sophisticated brain measurements a specific brain etiology will be determined. Perhaps comprehension has been assumed because the focus in the field of reading has been on decoding, and more recently on the context effect.

Or, perhaps a cause is lack of stimulation, an atrophying effect. Old-time radio and record stories created auditory stimuli that promoted imagery. Currently, however, leisure time is spent engaging in a pastime that offers images rather than stimulates images. Television viewing not only provides images but also consumes what may have been reading time, storytelling time, and language interaction time—time that stimulated imagery.

Whatever the cause, gestalt imaging ability appears to be a function unto itself. Although impaired phonological processing and decoding, weak oral vocabulary, and reduced prior knowledge and background of experiences may contribute to weak imaging, these factors alone do not appear to be causal. As stated earlier, many individuals with good vocabulary for isolated words *are not able* to comprehend efficiently. Many individuals with wide experiences and good educations *are not able* to comprehend efficiently. Many good decoders *are not able* to comprehend efficiently. In contrast, many poor decoders *are able* to comprehend efficiently. If concepts or content are presented to them orally, they appear brilliant in their ability to interpret and reason.

Although perhaps not causal, weak decoding can be a primary contributor to weak gestalt imagery. An individual can have good imagery and good comprehension *only* if he or she can decode enough words critical to the integration and processing of the gestalt. A few decoding errors may cause ridiculous images, and necessitate rereading for contextual cues and correction. However, a severe phonological processing disorder, causing numerous decoding errors (difficulty with surface structure), may cause enough image distortion to interfere with comprehension.

Weak vocabulary may interfere with gestalt imagery if the unknown words are critical to the whole. If not critical to the gestalt, the imaged concept—context—may serve to stimulate vocabulary development. It is not clear which problem existed first—poor vocabulary or poor gestalt imagery—though it is evident that stimulating images for vocabulary aid in the storage and retrieval of meaning for isolated words. Smith, Stahl, and Neil (1987), after a study with 142 university students, state, “The significant difference that occurred between the definition only and the definition and sentence and imagery groups supports Paivio’s dual coding theory. In accord with Paivio’s theory the visual image did provide an additional memory trace that improved long term memory for the vocabulary items in the study. This finding mirrors research spanning the years as far back as Kirkpatrick in 1894.”

Prior knowledge and background experience also may interfere with comprehension and imaging. But, techniques to access prior knowledge such as first discussing material with children, first setting the scene, and first teaching vocabulary do not necessarily stimulate independent comprehension. The *individual* will need to be able to set the scene by decoding, imaging, and interacting with stored images so as to have deep structure available for meaning. The individual will need to have imaging

ability to hold and integrate vocabulary with incoming language and images—creating a gestalt.

Nonentities can be created from theories that start and become unwieldy and often inaccurate as they spin. Thus, the firm earth of experimental data is often comforting and assuring. My data comes from clinical interaction and empirical research with individuals of all ages. After years of trial and error, and the weeding out of irrelevancy, a process of sequential stimulation emerged. The result is that development of gestalt imagery is possible and produces significant improvement in language comprehension.

Many individuals need more than just a cue or reminder to image. For these individuals gestalt imagery can be developed by direct stimulation, requiring specific questioning. The gestalt of the stimulation is: verbalization of given pictures, verbalization of images for a single word, and verbalization of imaged gestalts for sentences, paragraphs, and pages of content. The specific steps are:

1. Picture to Picture

The individual describes given pictures. Structure Words of *what, size, color, number, shape, where, when, background, movement, mood, and perspective* are introduced to provide descriptive elements. By questioning with “choice and contrast,” the teacher stimulates a detailed verbal description of a given picture. The goal is to develop fluent, detailed verbalizing from a given picture prior to requiring detailed verbalizing of an image.

2. Word Imaging

The individual describes his or her own image with assistance of the structure words and specific questioning of choice and contrast. The procedure moves from the “personal image” level to the “known noun” level that stimulates detailed imagery for a familiar, high-imagery word such as clown, doll, Indian, cowboy, etc. The goal is to develop detailed visualizing and verbalizing of a word prior to requiring detailed visualizing and verbalizing of sentences.

3. Sentence Imaging

The individual images and describes—visualizes and verbalizes—a sentence using a previously imaged noun. The teacher creates the simple sentence, presents the sentence to the individual orally, and questions with choice and contrast to stimulate imagery.

4. Sentence by Sentence Imaging

The stimulation is now directed as assisting the individual with the creation of an *imaged gestalt*. The procedure begins receptively, from a short self-contained paragraph, with each sentence read orally to the individual. The individual visualizes and verbalizes each sentence and places a three-inch colored square to note the imaged sentence. Each sentence of the paragraph is visualized and verbalized. At the completion of the paragraph, with approximately four colored squares representing the sentences, the individual gives a “picture summary” by touching and describing his/her images for each square. Following this, he or she gives a “word summary” by collecting the colored squares and sequentially summarizing the paragraph, using specific images to assist with retrieval.

5. Sentence by Sentence with Interpretation

As the Sentence by Sentence process is developing an imaged gestalt, the stimulation extends to interpretation and critical thinking. The imaged gestalt is used as the cognitive base for higher order thinking skills of main idea, inference, conclusion, prediction, and evaluation.

6. Multiple Sentence Imaging, Paragraph Imaging, Paragraph by Paragraph Imaging

The succeeding steps extend the language from which the individual visualizes and verbalizes, and interprets. The material becomes longer and denser with the individual decoding or orally receiving the language input. The process requires the individual to visualize gestalts, verbalize summaries, and interpret from both oral and written language.

The Visualizing/Verbalizing process that has been exploratory now appears to be compatible in scope to the dual coding theory, Paivio (1971). “The most general assumption in dual coding theory is that there are two classes of phenomena handled cognitively by separate subsystems, one specialized from the representation and processing of information concerning nonverbal objects and events, the other specialized for dealing with language.” The nonverbal (symbolic) subsystem is referred to as the imagery system because its critical functions include the analysis of scenes and the generation of mental images. The language-specialized system is referred to as the verbal system, Paivio (1986). “Human cognition is unique in that it has become specialized for dealing simultaneously with language

and with nonverbal objects and events. Moreover, the language system is peculiar in that it deals directly with linguistic input and output (in the form of speech or writing) while at the same time serving a symbolic function with respect to nonverbal objects, events, and behaviors. Any representational theory must accommodate this functional duality.”

Clinical Data

My focus has been in the area of clinical diagnosis and treatment, offered individually, to students of all ages. The primary focus of treatment is to develop language comprehension, or phonological processing, or a combination of both. This results in interesting individual case studies showing marked improvement in language processing. One example is the filling of one college graduate’s cognitive toll kit. Before clinical treatment to develop gestalt imagery—language comprehension, he had twice taken the MCAT (Medical College Admissions Test) and received a score of four on the reading comprehension subtest. Since the average was eight, he said, “No medical schools will consider me.” After ten weeks of intensive treatment, he was performing at the 98th percentile in reading comprehension on the Gray Oral Reading Test Revised. When he retook the MCAT he received a score of ten in reading comprehension, performing above average.

Although the following results are based on clinical study, there necessarily was no control group. Therefore, the results should be considered tentative, a basis for additional controlled studies. In 1989, 45 individuals received clinical intervention—intensive therapy consisting of four hours of daily individual treatment—for whom the focus of treatment was *only* gestalt imagery—language comprehension stimulation. Each individual was diagnosed to determine receptive oral vocabulary (Peabody Picture Vocabulary Test), expressive oral vocabulary (Detroit Tests of Learning Aptitude, Verbal Opposites), phoneme segmentation ability (Lindamood Auditory Conceptualization Test), word attack (Woodcock Reading Mastery Tests), word recognition (Slosson Oral Reading Test), oral paragraph comprehension (Gray Oral Reading Test, Revised), and silent reading comprehension (Descriptive Tests of Language Skills of the College Board, Reading Comprehension subtest). The 45 individuals ranged in age from nine to 57 years old and included 22 males and 23 females: 18 were in grades K-8; 13 were in grades 9-12; 5 were in college; and nine were adults, primarily college graduates. Although performing poorly in reading comprehension, it is important to note their performance on other diagnostic

tests. For example, the Peabody Picture Vocabulary Test indicated that 80 percent had age-level or above receptive oral vocabulary skills, The Detroit Test of Learning Aptitude, Verbal Opposites subtest, indicated that 71 percent had age-level or above expressive oral vocabulary skills. The Lindamood Auditory Conceptualization Test indicated that 88 percent had excellent phoneme segmentation ability. The Woodcock Word Attack Test indicated that 83 percent had above grade level word attack skills. The comprehension disorder clearly appears to be isolated from the above factors.

Since attention had been given to each individual rather than to a group, the 45 were not all given the same pre- and posttests. However, the following will report on the individuals who were given the same pre- and posttest from which statistical evidence can be evaluated. The average time in individual treatment was 47.26 hours, with a range from 16 to 110 hours.

Seventeen individuals, ranging in age from 11 to 57 years old, were administered the Gray Oral Reading Test Revised. The percentile mean for the pre GORT-R Test was 43.94. The percentile mean for the post GORT-R Test was 75.55. This repeated measure showed highly significant effect for the group, $p < .001$.

Sixteen individuals, ranging in age from 15 to 52 years old, were administered the Descriptive Tests of Language Skills of the College Board, Reading Comprehension subtest. The percentile mean for the pre College Board was 56.06. The percentile mean for the post College Board was 71.29. Again, this repeated measure showed highly significant results for the group, $p < .001$.

Twenty-seven individuals, ranging in age 11 to 59 years old, were administered the Detroit Tests of Learning Aptitude, Oral Directions subtest. The mental age level average for the pre Oral Directions subtest was 11.80 and the mental age level average for the post Oral Directions subtest was 14.33. The overall average gain in mental age was 2.53 years.

Chance Program

Motivation and interest can interfere with comprehension and active focus, but individuals with good comprehension appear to have access to automaticity in gestalt imaging. They appear to comprehend readily, with ease. However, many individuals with Language Comprehension Disorder may be mislabeled lazy, unmotivated, inattentive, and not interested. Graceland College in Iowa, a private liberal arts college, was considering a “motivation tract” for college students at risk, many on academic probation.

In 1988 a study was conducted resulting in the Chance Program. Diagnostic testing indicated that a high percentage of students being considered for the motivation track, scored low on reading comprehension measurements. Thus a number of these students entered into a trial voluntary program, entitled the Chance Program, and were given direct stimulation to develop gestalt imagery while continuing to attend their regular classes.

Diagnostic tests measuring oral vocabulary, phoneme segmentation, word attack, word recognition and paragraph comprehension were administered to the 16 Chance Program students. The testing indicated good phoneme segmentation, good spelling, good word recognition, good word attack, low vocabulary, and *poor reading comprehension*. The mean beginning scores on the Nelson-Denny Reading Test, vocabulary and reading comprehension, were lower for the 16 students in the Chance Program as compared with Nelson-Denny scores taken from a sample of 120 students randomly selected from the student body. For example, in vocabulary and reading comprehension, the mean percentile rankings for the Chance Program students were 13.8 and 13.3, respectively. The mean percentile rankings in vocabulary and reading comprehension for the 120 students of the student body were 41.1 and 44.8, respectively.

After treatment to stimulate gestalt imagery, the Chance Program students demonstrated a significant gain in reading comprehension. On the Descriptive Tests of Language Skills on the College Board, Reading Comprehension subtest, the mean percentile ranking improved from the 29.8 percentile to the 51.6 percentile. On the Nelson-Denny Vocabulary, the mean percentile ranking improved from the 13.8 percentile to the 22.1 percentile. On the Nelson-Denny Reading Comprehension, the mean percentile ranking improved from the 13.3 percentile to the 33.1 percentile.

The gains made on the Nelson-Denny Comprehension Test were highly significant, $p < .001$. the gains made on the Nelson-Denny Vocabulary Tests were significant, $p < .05$. The gains noted on the Descriptive Tests of Language Skills of the College Board, Reading Comprehension subtest were also significant, $p < .05$.

Of further interest, the grade point average (G.P.A.) for the students who received gestalt imagery treatment in the Chance Program improved from an average of 2.31 to 2.76. This is an 11 percent increase in G.P.A. and is more significant considering that 14 of the 16 students also had an increase in graded semester hours, from an average of 10.95 to 14.0. Because of the noted gains in comprehension and G.P.A., the status of the Chance Program changed from that of a pilot study to that of a part of the curriculum at Graceland College.

Paivio (1986) said, “ The dual coding interpretation is straightforward. The concrete descriptive tasks required a high degree of referential exchange between the verbal and imagery systems.” The Chance Program data, our case studies, and statistical data are a *beginning* statement that sequential steps of visualizing and verbalizing stimulate imaged gestalts and language comprehension.

Summary

Reading is cognition. Gestalt imagery contributes to the cognition process of comprehension oral and written language. The imaging factor, discussed for many years in the field of cognitive psychology, appears to be automatic for many individuals and has, perhaps, been assumed to be present for all. This assumed factor, as well as the focus on decoding, the lack of good oral and written comprehension tests, a culture addicted to television viewing, the continuing dispute over context, phonological processing, and sight word instruction has left comprehension without *direct* stimulation. Instructional procedures to develop comprehension have been in the format of reading and/or listening and answering questions—a format that *tests* comprehension rather than *teaches* comprehension.

Of late, because of the psycholinguistics’ cry for meaning and deep structure, the field of reading has been turning away from excessive concern over surface structure. However, increasing vocabulary and stimulating background knowledge or use of context clues does not guarantee comprehension development.

With specific attention to the integration of imagery and verbalization, it is possible to develop an imaged gestalt from which interpretation and reasoning can be processed. “According to the dual coding theory, meaning consisted of the relations between external stimuli and the verbal and nonverbal representational activity they initiate in the individual,” Paivio (1986).

It is my hope that this initial inquiry will serve to generate further discussion and research focusing on the diagnosis and development of the imaged gestalt and language comprehension.

References

- Aristotle. 1972. *Aristotle on Memory*. Providence, Rhode Island: Brown University Press.
- Arnheim, R. 1966. Image and thought. In G. Kepes (Ed.). *Sign, Image, Symbol*. New York: George Braziller, Inc.
- Bell, N. 1986. *Visualizing and Verbalizing for Language Comprehension and Thinking*. Paso Robles, California: Academy of Reading Publications.
- Bleasdale, F. 1983. Paivio's Dual-Coding Model of Meaning Revisited. In J.C. Yuille (Ed.). *Imagery, Memory and Cognition: Essays in honor Of Allan Paivio*. New Jersey: Lawrence Erlbaum Associates.
- Bower, G.H. & Morrow, D.G. 1990. Mental Models in narrative comprehension. *Science*: Jan: 44-48.
- Kosslyn, S.M. 1976. Using imagery to retrieve semantic information: A developmental study. *Child Development*. 47: 434-444.
- Kosslyn, S.M. 1983. *Ghosts in the Minds Machine*. New York: W.W. Norton.
- Levin, J.R. 1973. Inducing comprehension in poor readers. *Journal of Educational Psychology*. 65: 19-24.
- Levin, J.R. 1981. On functions of pictures in prose. In F. Pirozzolo & M. Wittrock (Eds.). *Neuropsychological and Cognitive Processes in Reading*. New York: Academic Press.
- Linden, M.A. & Wittrock, M.C. 1981. The teaching of reading comprehension according to the model of generative learning. *Reading Research Quarterly*. 17: 44-57.
- Long, S.A., & Winograd, P.N., & Bridge, C.A., 1989. The effects of reader and text characteristics on reports of imagery during and after reading. *Reading Research Quarterly*. 19(3):353-372.
- Marks, D.F. 1972. Vividness of visual imagery and effect on function. In P. Shehan (Ed.). *The Function and Nature of Imagery*. New York: Academic Press.
- Oliver, M.E. 1982. Improving comprehension with mental imagery. Paper read at the Annual Meeting of the Washington Organization for Reading Development of the International Reading Association, Seattle, Washington, March 1982.

- Paivio, A. 1969. Mental imagery in associative learning and memory. *Psychological Review*. 76:241-263.
- Paivio, A. 1971. *Imagery and Verbal Processes*. New York: Holt, Rinehart, and Winston. Reprinted 1979. Hillsdale NJ: Lawrence Erlbaum Associates.
- Paivio, A. 1986. *Mental Representations: A dual coding approach*. New York: Oxford University Press.
- Peters, E.E. & Levin, J.R. 1986. Effects of a mnemonic imagery strategy on good and poor readers' prose recall. *Reading Research Quarterly*. 21:179-192
- Piaget, J. & Inhelder, B. 1971. *Imagery and the Child*. New York: Basic Books, Inc.
- Pirzzolo, F. & Wittrock, M. 1981. *Neuropsychological and Cognitive Processes in Reading*. New York: Academic Press, Inc.
- Pressley, G.M. 1976. Mental imagery helps eight-year-olds remember what they read. *Journal of Educational Psychology*. 68:355-359.
- Pribram, K. 1971. *Languages of the Brain: Experimental paradoxes and principles in neuropsychology*. New York: Brandon House, Inc.
- Richardson, A. 1969. *Mental Imagery*. London: Routledge and Kegan Paul.
- Rollins, M. 1989. *Mental Imagery: On the limits of cognitive science*. New Haven, Connecticut: Yale University Press.
- Sadoski, M. 1983. An exploratory study of the relationship between reported imagery and the comprehension and recall of a story. *Reading Research Quarterly*. 19(1):110-123.
- Sheehan, P.W. (Ed.). 1972. *The Function and Nature of Imagery*. New York: Academic Press.
- Smith, B.D., Stahl, N., & Neil, J. 1987. The effect of imagery instruction on vocabulary development. *Journal of College Reading and Learning*. 20:131-137.
- Stemmler, A. 1969. Reading of highly creative versus highly intelligent secondary students. *Reading and Realism*. 13:821-831.
- Tierney, R. J. & Cunningham, J. W. 1984. Research on teaching reading comprehension. In P.D. Pearson (Ed.). *Handbook of Reading Research*. New York: Longman.