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VISUAL IMAGERY ABILITY AND ITS RELATIONSHIP TO TELEVISION WATCHING AND RECREATIONAL READING.

THE OHIO STATE UNIVERSITY, PH.D., 1979

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1979
VISUAL IMAGERY ABILITY AND ITS RELATIONSHIP TO
TELEVISION WATCHING AND RECREATIONAL READING

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
Douglas Richard Kutner, B.A., M.A.

* * * * *

The Ohio State University
1979

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Professor Henry Leland  Department of Psychology
This work is dedicated to
Laura Davis - My Grandmother
   For Sharing with Me
      So Much of Her Great Spirit
   and Love of Life and Learning
ACKNOWLEDGMENTS

In his consistent, fair, and quietly understanding manner; in the careful attention that he paid to my work, Dr. John Horrocks allowed me to grow, and helped me to greatly improve my ability to think.

With his immense energy and force of personality, Dr. Henry Leland taught me the beginnings of real insight and understanding, and provided needed suggestions and support. But mostly, he has been a great friend.

Dr. George Thompson's scholarly and incredibly attentive mind has helped this to be a far better work than it might otherwise have been.

The completion of this project rests on a foundation of many years of prodding and caring from my family. It was worth it.

And Carol was always there.
VITA


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PUBLICATIONS


FIELDS OF STUDY

Major Field: Developmental Psychology

Studies in Mental Retardation. Professor Henry Leland
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CHAPTER I
INTRODUCTION

The purpose of this study is to explore the relationship between visual imagery ability, television watching, and recreational reading. Television watching and recreational reading are measured in terms of amount of time spent, intensity of involvement in, and cognitive awareness of each activity. It is hypothesized that television watching is incompatible with the development of visual imaging skill.

For the purposes of this study, imagery is defined as:
"...a faint subjective representation of a sensation or a perception without adequate sensory input, present in waking consciousness as a part of an act of thought" (Holt, 1964). As further clarified by Hebb (1968): "The mechanism of imagery is an aberrant mechanism of exteroception, not a form of looking inward to observe the operations of the mind." The study of imagery has had quite a tenuous position in the history of American psychology, until recently, because of its association with introspection and introspective methods of investigation. This writer does not feel that introspection is necessary to
the study of imagery. In the present research, imagery is investigated by paired-associate learning tasks developed and organized by Alan Paivio and his associates at the University of Western Ontario.

It has been noted in the findings of numerous research studies that the average reading level for students entering college has been steadily declining in recent years. Beaton (1977) has recently published a study under the auspices of the College Entrance Examination Board which covers the years from 1960 to 1972. During this period of time, the study indicates, there was a drop in verbal ability for all three groups studied (high school seniors, college entrants, and Scholastic Aptitude Test takers). The drop was greater for SAT takers than for the other two groups. Background characteristics of all groups (age, sex, parental education and occupation, family configuration, high school curriculum, and expected college major) did change appreciably, though it was reported that: "...none of these factors provided a major explanation of the decline among high school seniors and college entrants" (Beaton, 1977). A number of separate reports (Brelan, 1976; Cleary & McCandless, 1976; Jackson, 1976) sponsored by the Educational Testing Service, indicate declines in verbal SAT scores from at least 1965.
Tuinman, Rowls, & Farr (1976) conducted a national study of reading achievement which included research reviews extending as far back as 1916. Results from these reviews (completed as early as 1940) and questionnaires which the investigators sent to large Metropolitan school districts, indicated that reading improved steadily, though slightly, until 1965. From 1965 to the present, the authors agreed with the conclusions of the Educational Testing Service (which has only been collecting data since 1964), that reading achievement may have declined slightly.

The viewing of television is pervasive in the lives of Americans. The Electronic Industries Association estimated that there were 125,300,000 television sets in use in the United States in 1975 (Golenpaul, 1977). This includes 99.9 percent of American homes. The Nielsen company provides the following 1976 viewing statistics for Americans on a per week basis (Delury, 1978):

<table>
<thead>
<tr>
<th>Category</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>Women (18-24)</td>
<td>30</td>
</tr>
<tr>
<td>Men (18-24)</td>
<td>21</td>
</tr>
<tr>
<td>Female Teenagers</td>
<td>21</td>
</tr>
<tr>
<td>Male Teenagers</td>
<td>22</td>
</tr>
<tr>
<td>Children (6-11)</td>
<td>26</td>
</tr>
<tr>
<td>Children (2-5)</td>
<td>29</td>
</tr>
<tr>
<td>Overall Average</td>
<td>28 hours, 41 min's.</td>
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Some estimates have ranged as high as 54 hours of television per week for children. This figure is reported in a number of different sources (Winn, 1977).
A clear relationship between television and reading has yet to be established in the literature. In a 1963 review, Eleanor Maccoby concluded that: "Television makes little difference in the child's school performance, nor does it interfere with book reading" (Maccoby, 1963). The evidence since 1963 is changing, but has not necessarily clarified the nature of the relationship between television and reading. Wilbur Schramm, one of the authors of an early pioneering work in the effects of television (Schramm, Lyle, & Parker, 1961), recently completed a review which indicated that:

The major studies show that television viewing, after the early school years, tends to be associated with lower-than-average achievement, although the relative extent to which viewing affects achievement or unsatisfactory achievement encourages children to take refuge in television is not fully understood. Television reduces reading time, social interaction time, and the opportunity to practice certain skills necessary to academic excellence. It tends to reduce the average level of intellectual stimulation available to a child after the age of 9 or so. The trend indicated by the evidence is that television viewing patterns belong to a group of strong variables that interact with each other, and with school and test performance--probably with negative effect (Schramm, 1976).

An additional insight is provided by Cramond (1977) who, in reviewing works by Schramm, Lyle, & Parker (1961), and Himmelweit, Oppenheim, & Vince (1958), paraphrases Himmelweit:
...it is those children who are perhaps in greater need of reading who are likely to give it up—those who read fewest books before having television were, it seems, the most affected by viewing (Cramond, 1977, p. 278).

This writer hypothesizes that an important factor that accounts for a portion of the television/reading interaction, is the process of internal imaging (forming pictures in one's head). It is proposed that visual imaging is a necessary correlate of the enjoyment derived from recreational reading. As Kessel (1972) puts it: "It is not unreasonable to propose that the evocation of total visual scenes is one psychological event at the root of literary appreciation." It is further proposed that a long history of television watching, especially when television precedes reading, mediates against the development of internal imaging skill, and thus potentially decreases reading enjoyment.

So far as this writer has been able to discern, no investigator has attempted to test the relationship of internal imaging ability to factors involved in recreational reading (reading for enjoyment) and factors involved in television watching.
Research Hypotheses

1: Internal imaging ability as measured by four paired-associate learning tasks, is inversely related to amount of, intensity of involvement in, and cognitive awareness of, television watching.

2: Internal imaging ability as measured by four paired-associate learning tasks, is positively related to amount of, intensity of involvement in, and cognitive awareness of, recreational reading (reading for enjoyment).

3: Amount of television watching is inversely related to amount of recreational reading.
CHAPTER II
LITERATURE REVIEW

Imagery

History of the study of imagery

From Sir Francis Galton, whose study of imagery in the 1890's produced the first questionnaire and statistical surveys, thinking was to be studied by introspective analysis. As Holt (1964) reconstructs it, Kulpe's students at Wurzburg discovered by 1908, that: "...essential operations even of ordinary problem solving or associative thinking in the laboratory did not go on in the full light of consciousness" (Holt, 1964).

Two alternative solutions to this research dilemma were proposed just before World War I: behaviorism and psychoanalysis. "They have more in common than is often supposed: Both are primarily concerned with behavior, neither assuming that the description of conscious contents really explains anything" (Holt, 1964). The "mentalistic" concepts such as imagery and states of consciousness were considered anathema in what Hebb (1960) characterized as an American "psychological revolution," implying in that phrase, the extremes to which the field
of psychology went in rejecting some and accepting other doctrines and areas of study.

The experiences of astronauts, prisoners of war, hallucinogenic drug experimenters, and large numbers of UFO watchers, heightened awareness of the important presence of hallucinations, and their possible effects upon human behavior. Holt (1964) cites three major developments in neurological research as stimuli for the re-emergence of imagery research: Electroencephalography, work by Magoun and others on the reticular activating system (RAS), and direct stimulation of the brain. Electroencephalographic studies, and the discovery of the regular and different rhythms of brain activity have allowed researchers to describe and differentiate brain behavior and compare this with self reports. It has been shown that the RAS is directly responsible for sleep and wakefullness and degree of alertness.

In surgical procedures for the treatment of epilepsy, Penfield and Jasper (1954) found that direct stimulation of exposed cortex of locally anesthetized patients caused a vivid re-experiencing of past events in patients lives. Certainly one of the more dramatic statements in scientific literature comes from Penfield and Jasper (1954):

> there are in the temporal cortex innumerable neurone patterns which constitute records of memory. The electrode causes the patient to have a psychical experience, like the memory
of some past event, and he can describe it as
he lies upon the operating table. The hallu-
cination thus produced may be auditory or
visual, or both, but is neither a single
sound nor a frozen picture...such hallucina-
tions, or memories, or dreams continue to
unfold slowly while the electrode is held in
place. They are terminated suddenly when the
electrode is withdrawn. This is a startling
discovery. It brings psychical phenomena
into the field of physiology. It should
have profound significance also in the field
of psychology provided we can interpret the
facts properly (p. 242f).

The systematic desensitization technique of Joseph
Wolpe (e.g., 1958), which very successfully decreases
the effects of phobic associations, is very much
dependent upon the patient's use of imagery. Finally,
David Palermo (1970) cites the work of a number of
linguists, notably Noam Chomsky (e.g., 1957) in the
areas of language acquisition and behavior, for having
demonstrated the inadequacy of a purely behavioristic
model of human functioning. All of these factors have
conspired to return imagery research to the realm of
acceptable scientific endeavors.

These examples do not tell the entire story. Much
of the last 40 years can be seen as establishing a
comfortable identity ("...the secure place won in psycol-
ogy for the objective operational method"Holt, 1964) for
the scientific discipline called psychology. During
this period, a line of psychological investigation had
to prove fruitful to psychology as a science, as well as
advance the knowledge and understanding of man.

To expand this point a little further, there is a changing concept of science and scientific method in the general American culture today. Pure, rational, cold, quantitative science has progressed far enough in many disciplines to show some of its weaknesses. We have become sophisticated enough to see the limits of our sophistication.

The proper function of objectivity as a scientific ideal is to preserve us from wishful thinking and perceiving, so that we do not delude ourselves nor lose touch with reality. Humanism need not be undisciplined; a warm heart does not preclude a cool head" (Holt, 1972, p. 5).

Imagery Measurement

One of the first comprehensive research instruments in imagery was developed by G.H. Betts (1909). To further advance his introspectionistic investigations of imagery, he developed the "Questionnaire Upon Mental Imagery" (QMI). This 150 item instrument involved seven sense modalities: visual, auditory, cutaneous, kinaesthetic, gustatory, olfactory, and organic. Subjects were asked to focus their mind on a particular example (e.g., visual: "the sun sinking below the horizon") and, carefully consider the image. They were then to rate the image on a seven point scale according to vividness of the image. The scale ranged from "no image at all" (7) to "perfectly
clear and vivid" (1). Examples of other modalities are: auditory: "the whistle of a train;" cutaneous: "a fur muff;" kinaesthetic: "reaching up to a high shelf;" gustatory: "granulated (white) sugar;" olfactory: "an ill-ventilated room;" and organic: "drowsiness."

Betts' study included 143 subjects which consisted of three college student groups and 16 "specialists" (professors and trained students). The major difference found occurred between the college students and the specialists. Generally, the students' perceptions were very clear, while the specialists' perceptions fell between recognizable and "vague and dim." Imagery ability was evenly distributed throughout the different sense modalities. There was very little correlation between reported imagery ability and college grades.

The second popular self-report research instrument designed to assess imagery ability is the Gordon Test of Visual Imagery Control (Gordon, 1949). It is much less ambitious than Betts' questionnaire, and is not as widely used. In addition, a recent study (Westcott & Rosenstock, 1976) has indicated that the Sheehan revision of the Vividness of Imagery Scale of the QMI is significantly more reliable than the Gordon test.

Sheehan (1967) set out to shorten the QMI without sacrificing its validity. During the development of the
shorter form Sheehan did corroborate Betts' finding (with 180 undergraduate psychology students in Sydney, Australia), and did manage to produce a scale of only 35 items, with a correlation of .92 with the total questionnaire. Test/re-test reliability on 62 American college students was .78. The QMI has been used extensively (Danaher & Thoreson, 1972; Rehm, 1973; Rimm & Bottrell, 1969; Sheehan, 1966, 1967) in what might be considered a modern development phase of imagery assessment.

Self-report measures may be satisfactory for measuring within-subject variability (such as strengths and weaknesses of one mode of imagery versus another), but it is very difficult to compare one subject with another, or one group with another. The reason for this is that the measures are too relativistic. Reliability is high—indicating only that a subject can be expected to respond consistently from one time to another—but validity may be low. What is vivid for one subject may be dim or vague for another, and there is no way to assess this with current self-report measures. These measures are not appropriate, then, for studies of imagery ability, since no indication of absolute ability is provided. In addition, studies such as those conducted by Westcott & Rosenstock (1976) and Rimm & Bottrell (1969) indicate that self-report
measures may involve as many as four factors each. The additional problem of a social desirability loading is to be discussed in detail later in this review.

An important alternative to self-report measures is the paired-associate learning paradigm (PAL). It has been demonstrated that imagery can significantly enhance recall performance in the PAL paradigm (Bower, 1970; Bugelski, 1970; Lambert & Paivio, 1956; Paivio, 1963, 1965, 1969, 1970; Paivio & Madigan, 1968; Reese, 1965). The use of imagery for mediation of PAL performance has been shown to be superior to rote repetition (Bower, 1970; Danaher & Thoreson, 1972; Paivio & Yuille, 1967, 1969; Rehm, 1973).

Paivio (1969, 1970) presents a theory of associative learning involving imagery, which he terms the "conceptual-peg hypothesis." This concept was first employed by Lambert & Paivio (1956), and is explained more recently (1970) by Paivio:

the hypothesis is that high-imagery, or concrete, stimulus terms such as "house" function as efficient stimulus " pegs " from which associates can be hung and retrieved by means of mediating images. To use Kohler's example, when a pair such as sugar-lake is presented, it evokes a compound spatial image. When the stimulus word sugar is presented on the test trial, it evokes the compound image of the sugar in the lake, which in turn mediates the overt response lake. At least it is assumed that such a process might occur, not that it inevitably does occur for all subjects (pp. 387-388).
The question that arises is whether imagery is in fact the relevant factor involved in the memorization of paired associates. In order to facilitate the answer to this, Paivio, Yuille, & Madigan (1968) published a list of 925 nouns rated for concreteness, imagery, and meaningfulness, and for frequency of use as indicated by Thorndike & Lorge (1944). Thirty subjects (15 male) rated 1,000 words on a seven-point scale of imagery. Twenty-eight subjects rated 1,000 words on a seven-point scale of concrete-abstractness; twenty-five subjects rated 950 words for meaningfulness according to a timed association technique developed by Noble (1952). With information such as this, Paivio (1968, 1969) has been able to show that: "rated imagery or concreteness of the item is the best single predictor of associative learning involving meaningful material that we have been able to identify" (Paivio, 1968). Paivio has also shown that imagery is highly effective independent of meaningfulness. Paivio also cites subjective report of numerous subjects to support the imagery involvement in PAL.

To be specific, when the stimulus member is concrete and high in rated imagery, subjects not only learn the pair better, but also report using images more often than when the stimulus is abstract (Paivio, 1970, p. 389).

There have been a number of researchers who have compared the PAL paradigm to other imagery measures
such as self-report, other memory paradigms, and physiological correlates of imaging processes. Rimm & Bottrell (1969) utilized four measures: 1) the PAL paradigm with standard instructions and visual imagery instructions (only the improvement resulting from the imagery approach was considered); 2) a self-rating of imaging ability of visual scenes; 3) respiratory changes accompanying imagining aversive scenes; and 4) a picture memory test (locating objects within a picture). The self-rating and picture memory tasks correlated significantly with respiratory change and the picture memory task correlated significantly with the PAL (improvement) task.

Rehm (1973) conducted a similar study incorporating five visualization ability tasks: 1) PAL (improvement); 2) Recognition Memory (RM) (photos of faces); 3) QMI (Sheehan revision); 4) Production of Visual Images (PVI) (Subjects rated the vividness of images such as "apple"); and 5) Imagining of Emotional Scenes (ES) (Vividness of two neutral and two anxiety scenes). The two memory tasks (PAL and RM) were significantly related (RM with the raw scores of the first and second PAL lists). The three self-rating measures all correlated significantly with each other. Neither memory task was related to any of the self-report measures. Rehm (1973) relates these results to the Rimm & Bottrell (1969) study and another study (Danaher & Thoresen, 1972) and concludes that
"...a clearly behavioral measure with convergent relationship to self-ratings has not yet been identified in these three studies."

Two informative studies are reported by DiVesta, Ingersoll, & Sunshine (1971) which provide insight into the nature of imagery tests. In the first study, 184 subjects were administered the Gottschaldt Figures Test; Space Relations Test; Space Thinking Test; Stroop Color-Word Interference Test; Automatization Test (subjects' rate of naming three objects); Vocabulary Test; Scholastic Aptitude Test (SAT); Reading Comprehension; Remote Associates Test (RAT); and the Achievement Anxiety Test. The factor analysis produced a first factor comprised of: The Reading Comprehension Test, SAT, Vocabulary Test, and the RAT. The investigators classify these as "Verbal or Symbolic Imagery" (DiVesta, Ingersoll, & Sunshine, 1971). The second factor (labelled Ikonic Imagery) consisted of Flags, Spatial Relations, the Gottschaldt, and SAT (Math) tests.

The second study included the Space Thinking, Scholastic Aptitude, Spatial Relations, and Gottschaldt tests, plus: Digit Span (Wechsler Adult Intelligence Scale); Tolerance for Ambiguity Scale; Social Desirability Scale; Memory-for-Designs Test; Betts Vividness of Visual Imagery Test; and the Gordon Test of Visual Imagery Control. Clear verbal and imagery factors were evident.
Additionally, there was a third factor: Social Desirability. This factor included the Control of Imagery Scale, the Vividness of Imagery Scale, and the Social Desirability Scale. It is apparent that behavioral and self-report measures of imagery assess different processes. "If ability to conjure up images is believed to be a culturally desirable trait then it is consistent that this bias will affect the score on the scale" (DiVesta, Ingersoll, & Sunshine, 1971).

These results prompted the selection of the paired-associate paradigm for use in this study. In addition, the PAL task is considered very similar to the reading process. The self report and spatial relations measures were judged not to be highly similar to the visual imaging that is hypothesized to be an important correlate of reading for enjoyment.

**Imagery and Children's Learning**

In part due to the developmental theories of Piaget (1971) and Bruner (1966), and the controversy between the two disparate conceptions of the place of imagery in the growth and acquisition of intelligence, there has been an incredible recent growth of research investigating imagery in children's learning. As witness to this, a recent comprehensive literature review: "Imagery and children's learning: putting the picture in developmental perspective"
(Pressley, 1977) includes no less than 130 articles, the vast majority of which are devoted directly to imagery and learning processes; and are published subsequent to 1973.

A large portion of imagery-in-learning research employs the paired-associate learning (PAL) paradigm with three types of imagery. Images may be imposed (provided by the experimenter) or induced (the subject is instructed to generate his own images). The stimulus/response pairs may be unelaborated (the images are separate) or elaborated (the images are depicted in an interactive scene). The three types of images studied are: 1) imposed-unelaborated; 2) imposed-elaborated; and 3) induced-elaborated.

The comparison of pictorial versus verbal labels in the imposed-unelaborated paradigm showed a definite age trend. Younger children (four and five) had difficulty learning from pictures when it was necessary to decode a picture to a verbal label.

In the imposed-elaborated paradigm, pictures were not superior to words, nor vice versa (Reese, 1970, 1972). There is a great difference in learning between a no-elaboration situation and one with elaboration, but the type of elaboration does not produce significant differences. This finding was true for all age groups. Pressley cites Rohwer's (1973) explanation that "meaning is more abstract than words or images." The theory asserts that
single mental processes such as language or imagery are inadequate to deal with the acquisition of meaning in and of themselves. "The important aspect is not the medium of the elaboration, but the meaningful context it provides" (Pressley, 1977). An interesting corollary argument which gives more force to the presence of imagery is proposed by Reese (1970b). He theorizes (after Bugelski, 1970) that "meaning is given by imagery (or perhaps aroused by imagery). Facilitation of retention, however, results from 'integrated imagery,' or imagery that has some functional, contextual meaning."

The induced imagery studies present a different picture (Rohwer, 1970). A developmental trend is evident, whereby five-year-olds cannot profit from instruction to form a mental image, while eight-year-olds can. Accepting a Piagetian interpretation, Pressley concluded that motor activity was a necessary counterpart of imagery production for kindergarten age children. One study (Wolf & Levin, 1972) indicated that manipulation (of toy pairs) increased mental imagery for five-year-olds. Guttman, Levin, & Pressley (1977) showed that the period between five and eight years is pivotal for the development of imaginal mediation of prose learning. While five-year-olds can profit from an imagery strategy if pictures are provided, nine-year-olds can construct their own internal images in order to improve their memory of stories. "The ability to
increase learning by self-produced internal visual elaborations is a truly developmental phenomenon" (Pressley, 1977).

Bruner (1966) contends that imagery--iconic representation--is a predecessor to verbal--symbolic representative processes. Imagery representation should diminish, accordingly, and verbal representation ascend and stabilize around ages seven to eight. The data do not support Bruner's position: "...there is absolutely no convincing evidence to support the Brunerian hypothesis" (Pressley, 1977). A developmental study of mental imagery and verbal processes (Forisha, 1975) not included in the Pressley review, also finds evidence against Bruner, and provides support for Piaget and Paivio. Nine tests, including verbal and imagery measures, were given to 200 children in the first and fifth grades. Forisha found that verbal and imaginal processes were independent traits, evidencing parallel and continuous growth at similar rates of development.
TELEVISION AND ITS EFFECTS

A great deal of attention has been paid to, and research conducted about the content of television. Conclusions are being reached about the effects of violent programming, the effects of commercials on children and adults, and the many possible instructional uses of television. Some people (Bettleheim, 1963; Brazelton, 1972; Emery & Emery, 1975; Hilgard as quoted in Mander, 1978; Krugman, 1971; Peper & Mulholland, 1971; Samuels & Samuels, 1975) are coming to believe that the act of watching television has far ranging effects on the individual independent of the specific type of content. This review will enumerate the different elements of the television viewing experience (the process) that are hypothesized to affect the viewer. In addition, personality and socio-cultural variables that are associated with television and reading behavior will also be presented.

Television has not gained its immense power and influence simply as a result of the medium itself. It is part of a larger trend in American culture toward a fascination with and reliance upon the Image, especially as used in mass communication. As early as 1843, a few years after the invention of the camera, Feuerbach noted
that "our era prefers the image to the thing, the copy to the original, the representation to reality, appearance to being" (quoted in Sontag, 1977). In characterizing the importance of the image in contemporary society, Susan Sontag refers to a widely agreed-on diagnosis: that a society becomes "modern" when one of its chief activities is producing and consuming images, when images that have extraordinary powers to determine our demands upon reality and are themselves coveted substitutes for first-hand experience become indispensable to the health of the economy, the stability of the polity, and the pursuit of private happiness" (Sontag, 1977, p. 153).

This point is evident on a more personal level, as described by Mander (1978):

Human beings no longer trust personal observation, even of the self-evident, until it is confirmed by scientific or technological institutions; human beings have lost insight into natural processes—how the world works, the human role as one of many interlocking parts of the worldwide ecosystem—because natural processes are now exceedingly difficult to observe (p. 54).

The television viewer may be especially susceptible to the images presented by this medium, perhaps more than by any other. Television does not involve peripheral vision. It restricts eye movement severely to an area of less than one third that of an average movie, for example. Television images do not actually exist. They are constantly changing (flickering on and off 30 times a second), so that the eye is constantly required to
"keep up." This situation has been compared with hypnosis. Mander (1978) quotes Ernest Hilgard:

Sitting quietly, with no sensory inputs aside from the screen, no orienting outside, the television set is itself capable of getting people to set aside ordinary reality, allowing the substitution of some other reality that the set may offer. You can get so imaginatively involved that alternatives temporarily fade away.

A hypnotist doesn’t have to be interesting. He can use an ordinary voice, and if the effect is to quiet the person, he can invite them into a situation where they can follow his words or actions and then release their imagination along the lines he suggests. Then they drift into hypnosis (p. 196).

Television has been characterized as an "electronic fireplace" (Crown, 1977) which people use as a source of relaxation and escape. The effect of television may be for many a calming, hypnotic, semi-trance-inducing state regardless of what is being watched. A University of Michigan study reported by Crown (1977) asked a national sample: "Were there any times yesterday that you would have liked to watch tv but didn’t because there weren’t any programs worth watching at that time?" Only ten percent of the sample answered in the affirmative. This suggests that many people watch television just to watch television, without regard for content, just as one might meditate, sip scotch, or sit in front of the fire.

One television study conducted in Australia (Emery & Emery, 1975) indicates that the watching of television
precludes any thoughtful, ongoing, critical cognitive thought. They say that: "...television not only destroys the capacity of the viewer to attend, it also...decreases vigilance." They compare the non-purposeful activity of the television viewer to a "continuous trance-like fixation...akin to daydreaming" (Emery & Emery, 1975). These effects are said to be caused by television because it is a "simple, constant, repetitive and ambiguous visual stimulus."

T. Berry Brazelton (1972) describes a similar phenomenon in an experiment with newborn infants. His purpose was to demonstrate the habituation ability of infants to stimuli; in this case, a bright operating light placed twenty-four inches from their heads. The light was turned on for three seconds and then off for one minute. This was repeated twenty times. Brazelton remarks:

By the fifteenth stimulus, sleep patterns appeared on the electroencephalogram, although it was clear that their eyes were still taking in light. After twenty stimuli the babies awoke from their induced 'sleep' to scream and thrash about (1972, p. 101)

Brazelton titles this reaction a "shutdown mechanism" with which the baby can tune out disturbing stimuli and enter into a sleep-like trance state. Brazelton continues:

Just like the operating room light, television creates an environment that assaults and overwelmgs the child; he can respond
to it only by bringing into play his shut-down mechanism, and thus becomes more passive (1972, p. 101).

Peper & Mulholland (1971) have studied the effect of television watching on brain-wave activity in children, and have reported that the child watching television evidences: "...a decrease in beta and an increase in slow activity with a large percentage of alpha." They associated beta wave activity with focusing and attending; alpha wave activity with passivity, or non-attending.

Television is a unidirectional phenomenon. No active involvement is necessary (or often possible). Reading requires involvement and concentration, and can be two-way if writing is included. Television determines the pace. It demands time of the watcher. It may control activity in a household; such as the rush to the bathroom during commercials and dinner between "Star Trek" and "The Waltons." Reading is self-paced. Rate, number, and time of breaks, the time of ending, all are controlled by the reader.

Not to lose the thread...it is this need, occasioned by the irreversible direction and relentless velocity of the television experience, that not only limits the workings of the viewer's imagination, but also causes television to intrude into human affairs far more than reading experiences ever do (Winn, 1977, pp. 52-53).

Television captures a child's time and attention before he learns to enjoy reading, to develop the ability
to form pictures in his head in conjunction with the printed word. Additionally, television is a hedonistic activity: it provides information without any need for effort on the part of the observer, thus breeding passivity. Furthermore, television shows are geared to provide an ending—a closure—within a pre-specified, standardized time period so that the viewer comes to expect timed, packaged, predictable reinforcement and resolution. Reading is incompatible with this. It requires time and effort and carries fewer guarantees of reinforcement in the simplistic television sense.

Therefore, purely on a hedonistic non-cognitive or ability basis, frequent watching of television makes reading—especially reading for enjoyment—less likely. It is harder, in other words, to get a person to be interested in reading, the more he is attached to television.

In contemporary American society, it is safe to say that television precedes reading. Prior to the advent of television, a child would be assisted to enter into fantasy worlds through reading. Though the story might have been external, the images were the child's. Today, however, a child enters the world of television before he can read. As Bruno Bettelheim (1963) expresses it: "Television captures the imagination but does not liberate it. A good book at once stimulates and frees the mind."
These pronouncements about the television viewing process are too highly speculative and too few to warrant any firm conclusions. While a great deal of criticism of television seems to be intuitively apparent, incontrovertible proof is very difficult to establish. It is necessary at this point to therefore turn to correlational data on media usage and personality variables for a different kind of insight into the interaction of variables related to television watching and reading behavior.

An excellent study offering longitudinal measurements of media usage on subjects in 1951, 1962, and 1970, provides valuable information. The study by Himmelweit & Swift (1976) was part of a larger 20 year inquiry into: "...the effects of different socializing experiences on the development of self-image, outlooks, and goals in adolescence and adulthood" (Himmelweit & Swift, 1972). In 1951, subjects were 13-14-year-old middle and working class youth. In 1962, 365 24-25-year-olds responded to the study; in 1970, 246 responded. In 1951 less than ten percent of the sample had television in their homes; when studied as adults, 90 percent had television.

The authors enumerate 14 "principles or generalizations" which result from their study. Three of these have direct bearing upon this review. The first relevant principle states: "The role of television and the other
mass media differs according to an individual's education and role in society" (Himmelweit & Swift, 1976). This principle, according to the investigators, applies not only to housewives and businessman, but equally to men of the same age and cohort. For the working class, television was strongly centered in home activities, while reading was associated with social relaxation (sitting and talking). Among the middle class, reading was associated with cultural interests. "The middle class (usually better educated), when house-bound through marriage and family, have long-established alternatives such as reading and other hobbies to turn to, all activities which can readily be pursued at home" (Himmelweit & Swift, 1976).

The second principle of importance states that: "The medium most readily available ('on tap') at a given period will be most heavily used by those with fewest resources" (Himmelweit & Swift, 1976). Usage of the popular medium during adolescence (whether it was movies for the 1958 group or television thereafter) was associated with lower ability (nonacademic courses) and strong peer-group orientation. Adults who used television heavily tended to have lower I.Q. scores and were frequent moviegoers as adolescents. It should be noted in this context that Lyle & Hoffman (1971) found high I.Q. often associated with high television watching of American children.
Himmelweit & Swift (1976) consider the movie-television relationship an example of the "functional equivalence of media." Lighter viewing of television is associated with "...a non-authoritarian outlook, good adjustment, cultural-centered interests, and middle-class background" (Himmelweit & Swift, 1976).

Mass appeal media was associated with powerlessness and conformity, while reading correlated with high education level, and social background. Those who thoroughly enjoyed reading (which offers more individual choice) tended to be future-oriented and non-authoritarian. Heavy television watchers were not found to value television, and often associated guilt with heavy watching:

Those bored by reading spent more time viewing than those who enjoyed books, but they enjoyed TV no more. This suggests the existence of undifferentiated viewing on the part of those who read little, a passive filling of time on their part. This view is supported by the fact that respondents who enjoyed reading and who watched television less were more clear-cut in their program likes and dislikes (Himmelweit & Swift, 1976, p. 153).

Furu (1971) in a Japanese study of children who grew up with television, also found television associated with guilt.

The third relevant principle from the Himmelweit & Swift (1976) article indicates that: "Enjoyment of one medium does not imply anything about the individual's response to another medium." For television and reading,
use and enjoyment of one medium were highly correlated, but no significant correlation was indicated between enjoyment of reading and enjoyment of viewing.

One factor seems clear: television watching is associated with passivity; an easy settling-in for a period of almost effortless stimulation. Television seems to appeal more to people who are less individualistic, have fewer resources, and exert less energy in their immediate environment. It is likely that there is a component of the television electronic process that reinforces this tendency more than other readily available media. Still, it is important to consider how television is used, and that it means different things to different people varying in socio-economic class and age group. Few solid conclusions relevant to this review emerge, as agreement is lacking from one study to another (Feeley, 1975; Howe, 1977; Howitt, 1976; Lyle & Hoffman, 1971a, 1971b; Robinson, 1971; Stein & Friedrich, 1975).

The question then, still remains: Does television watching negatively affect imagery ability and reading? No experimental studies were found to deal directly with television and its effect on imagery. Mander (1978) argues that television replaces personal images with public images. While the political-social consequences of this may very well be immense, there is no indication from the literature that television watching has a
negative effect upon internal imagery ability.

An interesting hypothesis linking television watching to reading ability is put forth by Winn (1977). She notes the correlation between the beginning of the decline in SAT scores—occurring in 1964 (as noted earlier in this review)—and the fact that the children taking the test in 1964 were of language learning age in 1950. This was the approximate beginning of nationally significant television broadcasting, and of sales of 4,000,000 television sets. The continuous decline in scores since 1964 and the fact that the decreases occurred in the form of fewer high scores and greater numbers of low scores, supports this hypothesis. If this reasoning is correct, then 1988 should be the last year of decline, according to Winn, since by 1975 television sets existed in 99.9 percent of American homes.

But the question certainly has not been answered. It remains to be seen by the present and future research, if a clear link can be demonstrated between television, imagery, and reading. At times in this review, the writer has felt as Dennis Howitt (1976) does:

The ridiculous thing about mass communications research is that in circumstances where it would seem incontrovertible that the mass media have an effect...it is very difficult to actually prove using the methods of social science (p. 329).
CHAPTER III
METHODOLOGY

Subjects

A total of 109 13, 14, 15, 16, and 17 year old subjects were selected from rosters providing Child Study Center-Ohio Youth Commission assignment numbers for each youth, from each of three boys' groups and two girls' groups at the Child Study Center (CSC). This is a temporary residential facility (four to six weeks) of the Ohio Youth Commission, designated to provide psychological, psychiatric, and social work analysis to facilitate placement of problem youth. Approximately 70 to 75 percent of the youth at CSC are returned home. Other placements range from foster and group homes to other Ohio Youth Commission correctional facilities.

Of the 109 subjects tested, 44 males and 28 females (total of 72) were retained for analysis. Fourteen of the protocols from the original 109 were used for test/re-test reliability. The remainder were eliminated because large sections of the questionnaires were not completed, markings were ambiguous, or the intelligence test scores never became available.
While generalization of results from a group such as this is limited, this is not thought to be of crucial importance, since the study is most concerned with investigating the relationships among the variables proposed: imagery, reading, and television. In order to test the ideas proposed with a high degree of confidence and generalizability, it is believed that a long-term developmental study would be required. That is beyond the scope of the present investigation.

Procedure

The word pairs, reading and television questionnaires, comprehension test, and Wide Range Achievement test were all administered in one session averaging one and one-half to two hours. An average of four to six subjects were tested per session. One session did involve 16 females, but supervision was enhanced by the presence of two adult group leaders.

A brief introduction to the study was presented by the investigator. All subjects were informed for a second time that participation was voluntary, and were asked to sign a form attached to the front of the test booklet, which described the study, named the investigator, and reiterated the subjects' voluntary participation.
**Instruments**

*Paired-Associate Tests for Imagery Ability*

The tests consist of four groups of 15 word pairs each. The words were selected for high imagery, medium to high meaningfulness, and high usage frequency, from a list of 925 nouns rated in this manner. The list was published for research such as this by Paivio, Yuille, & Madigan, 1968. The word pairs were administered in two sequential segments, with two sets of tape-recorded instructions. The first set of instructions detailed normal paired-associate directions, without containing any suggestions for memorization (see Appendix A).

Word pairs three and four were preceded by a second set of instructions:

A method that often helps in remembering word pairs is the use of visual images (or mental pictures). That is, when given the word pair 'bicycle--dog' you might imagine a dog riding a bicycle, or a dog chasing a bicycle.

Two different reliabilities were computed for the word pairs. First was a test of internal consistency computed separately for Standard Word Pairs (STDW) and for Imagery Instruction Word Pairs (IMAW). This analysis included 65 of the 72 total subjects. The Kuder-Richardson reliability (NO. 8) for STDW was .865; for IMAW it was .891.
Test/re-test reliability (Pearson r) with a two-week interval, was computed both for STDW and IMAW, males and females separately.

<table>
<thead>
<tr>
<th></th>
<th>Time 1 Mean</th>
<th>Time 2 Mean</th>
<th>Pearson r</th>
</tr>
</thead>
<tbody>
<tr>
<td>STDW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males (N=7)</td>
<td>9.71</td>
<td>18.71*</td>
<td>-0.06</td>
</tr>
<tr>
<td>Females (N=7)</td>
<td>12.85</td>
<td>19.14*</td>
<td>-0.18</td>
</tr>
<tr>
<td>IMAW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males (N=7)</td>
<td>18.86*</td>
<td>23.29</td>
<td>0.94</td>
</tr>
<tr>
<td>Females (N=7)</td>
<td>16.71*</td>
<td>20.29</td>
<td>0.61</td>
</tr>
</tbody>
</table>

It is interesting to note the similarities of the means between IMAW Time 1 and STDW Time 2 (marked *). It is apparent that subjects remembered and employed (with success) an imagery approach during the second session. While this possibility was anticipated, no instructional set was considered likely to reduce this effect without confounding or invalidating the test/re-test method assumptions. The very poor correlation of the STDW variable, then, is not necessarily considered to invalidate that variable.

Recreational Reading and Television Watching Questionnaires

The television watching questionnaire was developed first. An attempt was made to search the literature for questions, but the vast majority of articles do not include
examples of the questions used in the surveys. One book was found (Halloran, Brown, & Chaney, 1970), that did help to establish the range of questions used. Most, however, had to be devised specifically for this study.

The recreational reading questionnaire was purposefully written to be as similar to the television watching questionnaire as possible. Subjects were instructed that materials included for reading were books and short stories, with magazines, comic books, and newspapers being excluded.

Test/re-test reliabilities (Pearson r) were computed for the following questionnaire variables (two-week interval):

<table>
<thead>
<tr>
<th></th>
<th>Males (N=7)</th>
<th>Females (N=7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount</td>
<td>0.84</td>
<td>0.96</td>
</tr>
<tr>
<td>Intensity</td>
<td>0.63</td>
<td>0.77</td>
</tr>
<tr>
<td>Cognitive Awareness</td>
<td>0.95</td>
<td>0.81</td>
</tr>
<tr>
<td>Escape</td>
<td>0.90</td>
<td>0.48</td>
</tr>
<tr>
<td>Involved</td>
<td>0.51</td>
<td>0.54</td>
</tr>
<tr>
<td>Television:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount</td>
<td>0.84</td>
<td>0.79</td>
</tr>
<tr>
<td>Intensity</td>
<td>0.75</td>
<td>0.55</td>
</tr>
<tr>
<td>Cognitive Awareness</td>
<td>0.94</td>
<td>0.91</td>
</tr>
<tr>
<td>Escape</td>
<td>0.65</td>
<td>0.62</td>
</tr>
<tr>
<td>Involved</td>
<td>0.84</td>
<td>0.49</td>
</tr>
</tbody>
</table>

A complete description of the variables is included in the following section.
Comprehension Test

The test used was the comprehension subtest of the Gates MacGinitie Reading Tests (1965), Grades 7-9, Form E. All Subjects were administered this test as part of the test booklet. Instructions are included with the questions, and no additional instructions were given except in response to individual questions.

Wide Range Achievement Test (WRAT)

Both Level 1 and Level 2 of the WRAT (Jastak & Jastak) were administered, and summed for purposes of analysis. The test was administered in a room adjacent to the testing room, which enabled the investigator to see the Subjects at all times. This allowed the oral reading of the WRAT to proceed without disturbing the entire group, or causing unnecessary anxiety on the part of the testee.

Wechsler Intelligence Scales

All but five of the intelligence tests included in the present study were administered by psychologists at the Child Study Center. The five not administered by CSC staff were completed by the investigator. Because of personal preference and the 16 to 17 year old overlap between the Wechsler Intelligence Scale for Children (WISC) and the Wechsler Adult Intelligence Scale (WAIS), three different Wechsler tests (the third being the WISC-R)
were used in the data.

**Research Variables**

This is a presentation of all possible variables created from the data. Not all variables were necessarily used in any particular analysis. A description of the actual analyses is provided in the following section.

**Predictor Variables**

1) STDW: Standard Instruction Word Pairs.
2) IMAW: Imagery Instruction Word Pairs.
3) IMPRV: Improvement Word Pairs. For this variable, STDW is subtracted from IMAW to provide an indication of the extent to which the imagery instructions actually enhanced performance.
4) WRAT: Wide-Range Achievement Test.
5) COMPR: Comprehension subtest of Gates-MacGinitie Grades 7-9, Form E.
6) VER: Verbal subscale (Scale-score--No I.Q. conversions are used in any of the subscales or subtests.)
7) PER: Performance subscale.
8) SIM: Similarities subtest.
9) VOC: Vocabulary subtest.
10) PA: Picture Arrangement subtest.
11) COD: Coding subtest.
Dependent Variables

1) RAMT: Reading Amount. Reading questions 5 and 6 are multiplied together (see Appendix C).

2) RINT: Reading Intensity. This is a measure of how involved a person becomes in the reading process. Reading questions 10 through 17 are summed.

3) RCOGAW: Reading Cognitive Awareness. This variable measures how much attention a person pays to what he reads. Subjects are asked to fill in blanks about their favorite stories, their favorite characters from each respective story, and a brief plot summary of each story (or book). Reading questions 2, 3, and 4 are summed.

4) RESC: Reading Escape. An activity is defined as escapist if the impulsion toward the goal activity (reading) results from a negative repulsion away from some other activity or activities other than reading. A person with a high RESC score might be hypothesized to be reading "to get away from it all." A mean is computed for the first three statements of Reading question 1.

5) RINV: Reading Involved. An activity is defined as involved if the impulsion toward the goal activity (reading) results from positive attraction to that very activity. A mean is computed for statements 4 through 10
of Reading question 1.

6) TAMT: Television Amount. Television questions 7 and 8 are multiplied together (see Appendix B).

7) TINT: Television Intensity. This is a measure of how involved a person becomes in watching television. How easily might they be distracted, for instance. Television questions 13 through 17 are summed.

8) TCOGAW: Television Cognitive Awareness. This variable is virtually identical to RCOGAW. In answering about the plot of their favorite television shows, Subjects are asked about the last time they saw the show. Television questions 4, 5, and 6 are summed.

9) TESC: Television Escape. The statements for this variable are the same as those for RESC. A high TESC score theoretically would indicate that a person uses television mainly as an escape from daily drudgery such as homework, or some other undesirable aspect. A mean is computed for the first three statements of Television question 1.

10) TINV: Television Involved. The statements for this variable are the same as those for RINV. A high TINV score might result from a person who watches few but carefully selected television shows. A mean is computed for statements 4 through 10 of Television question 1.
Statistical Analysis

A correlation matrix of all predictor (independent) variables by all criterion (dependent) variables was computed. In addition, an intercorrelation matrix of all criterion variables is reported. Correlations of all predictor variables are included in two Tables in the Results chapter.

Three stepwise multiple regression analyses are computed for each of the hypotheses. For the first two hypotheses, the predictor variables included in the analyses are six: IMAW, IMPRV, COMPR, WRAT, FER, and PA. Six is the limit dictated by the total number of subjects available for the analyses. Of the 11 possible predictors, the six listed were chosen because of their predictive utility and conceptual range. A stepwise multiple regression analysis was performed employing all eleven of the predictor variables. Analyzing the trend of these variables over all the criterion variables, it was obvious that some variables predicted more criterion variables than others. These six variables also represent a useful conceptual range. Since the IMPRV variable is the result of subtracting STDW from IMAW, the STDW variable is not left out of the analysis completely. The COMPR and WRAT variables correlate very highly with the VER, VOC, and SIM variables, so that the Verbal measurement of subjects is well represented in the
regression analyses.

For the third hypothesis, the three television watching measures are considered predictor (independent) variables, and the recreational reading measures the criterion (dependent) variables. Three analyses are performed, each involving three measures of television watching as they are compared to one each of the three recreational reading measures (amount, intensity of involvement, and cognitive awareness).
CHAPTER IV
RESULTS

This chapter is divided into two sections. The first concerns analyses of the main variables: RAMT, RINT, RCOGAW, TAMT, TINT, and TCOGAW. The secondary variables--RESC, RINV, TESC, and TINV--are discussed in the second section. However, each of the Tables, whether concerned with descriptive data, correlations, or stepwise regression, includes all of the variables, so that the reader can see all appropriate comparisons and trends as easily as possible.

Hypothesis one was not supported. Results of the correlational analyses (Tables 3 and 4) indicate that imagery is significantly related, in a positive direction, to television intensity (TINT) and television cognitive awareness (TCOGAW) for males, and TCOGAW for females. For males, TINT is correlated with STDW and IMAW, while TCOGAW is correlated with IMAW and IMPRV. For females, TCOGAW is correlated significantly with IMAW only. No significant relationships were found for the amount variable (hours per day and days per week of television watching).

Of the six predictor variables entered into the stepwise multiple regression analysis on television
<table>
<thead>
<tr>
<th>PREDICTOR VARIABLE</th>
<th>MALES (N=44)</th>
<th>FEMALES (N=28)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>STDW (Standard Instruction Word Pairs)</td>
<td>12.16</td>
<td>6.37</td>
</tr>
<tr>
<td>IMAW (Imagery Instruction Word Pairs)</td>
<td>15.57</td>
<td>6.53</td>
</tr>
<tr>
<td>IMPRV (Improvement from STDW to IMAW)</td>
<td>3.41</td>
<td>5.38</td>
</tr>
<tr>
<td>WRAT (Wide Range Achievement Test Levels 1 &amp; 2)</td>
<td>120.05</td>
<td>25.81</td>
</tr>
<tr>
<td>COMPR (Reading Comprehension)</td>
<td>25.23</td>
<td>15.84</td>
</tr>
<tr>
<td>VER (Verbal Scale)</td>
<td>46.98</td>
<td>10.40</td>
</tr>
<tr>
<td>PER (Performance Scale)</td>
<td>48.98</td>
<td>9.88</td>
</tr>
<tr>
<td>SIM (Similarities Subtest)</td>
<td>9.68</td>
<td>2.66</td>
</tr>
<tr>
<td>VOC (Vocabulary Subtest)</td>
<td>8.25</td>
<td>1.99</td>
</tr>
<tr>
<td>PA (Picture Arrangement Subtest)</td>
<td>10.43</td>
<td>3.01</td>
</tr>
<tr>
<td>COD (Coding Subtest)</td>
<td>8.56</td>
<td>2.94</td>
</tr>
</tbody>
</table>
### TABLE 2
SUMMARY OF MEANS AND STANDARD DEVIATIONS FOR CRITERION (DEPENDENT) VARIABLES

<table>
<thead>
<tr>
<th>CRITERION VARIABLE</th>
<th>MALES (N=44)</th>
<th>FEMALES (N=28)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>RAMT (Reading Amount)</td>
<td>5.02</td>
<td>4.02</td>
</tr>
<tr>
<td>RINT (Reading Intensity)</td>
<td>20.50</td>
<td>4.31</td>
</tr>
<tr>
<td>RCOGAW (Reading Cognitive Awareness)</td>
<td>8.41</td>
<td>6.74</td>
</tr>
<tr>
<td>RESC (Reading Escape)</td>
<td>2.26</td>
<td>0.61</td>
</tr>
<tr>
<td>RINV (Reading Involvement)</td>
<td>2.75</td>
<td>0.39</td>
</tr>
<tr>
<td>TAMT (Television Amount)</td>
<td>14.19</td>
<td>7.85</td>
</tr>
<tr>
<td>TINT (Television Intensity)</td>
<td>13.86</td>
<td>2.67</td>
</tr>
<tr>
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**Correlations of Predictor Variables with Criterion Variables**

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* *p < .05

**p < .01**
### TABLE 5

**STEPWISE REGRESSION ANALYSIS ON TELEVISION VARIABLES MALES**

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TABLE 6
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ON TELEVISION VARIABLES
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*p .05
**p .01
watching (Tables 5 and 6), two--IMAW (Imagery word pairs) and COMPR (Comprehension)--predicted television amount significantly for males. No variables significantly predicted amount for females. IMAW, improvement from standard to imagery word pairs (IMPRV), and picture arrangement (PA) predicted TINT for males, while there were no significant predictors for TINT among females. The IMPRV variable predicted in a negative direction. TCOGAW was predicted by IMAW, COMPR (in a negative direction), and WRAT for males, and by IMAW only, for females.

Hypothesis two was well supported by the data. Tables 3 and 4 show that reading amount (RAMT) did not correlate significantly with any of the imagery variables, but reading intensity (RINT) correlated significantly with STDW and IMAW, and reading cognitive awareness (RCOGAW) correlated significantly with STDW for males. RCOGAW correlated significantly with IMAW and IMPRV for females.

In the stepwise multiple regression analyses on reading (Tables 7 and 8), RAMT was not predicted by any of the variables for males or females. RINT was predicted by IMAW and IMPRV (in a negative direction) for males, and by WRAT, COMPR (negative), IMPRV (also negative), and PA for females. RCOGAW was predicted by IMAW, IMPRV (negative), performance (PER) (negative),
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</table>

*p<.05  
**p<.01
and PA for males, and by IMAW, PA, and IMPRV for females.

Hypothesis three was partially supported. The intercorrelations of reading and television variables (Tables 9 and 10) indicate no significant correlations for the amount variable for television (TAMT). The RAMT variable, however, does correlate significantly with TINT for females. RINT correlates significantly with TINT for both males and females. RCOGAW correlates significantly with TCOGAW for females only.

None of the three main variables predicts RAMT for males (Table 11). For females, however (Table 12), all three variables predict RAMT, and TAMT does correlate negatively. However, the improvement in $R^2$ when TAMT is entered into the model is only .08 ($F=3.02$), so TAMT cannot be said to explain a great deal of the variance in RAMT.

RINT is predicted by TINT and TCOGAW for males, and by TINT and TAMT (again, negatively) for females. RCOGAW is predicted by TCOGAW and TINT for males, and by TCOGAW and TINT for females.

The positive significant correlations between intensity of television and reading, and cognitive awareness of television and reading, disprove Hypothesis three. Small support for the hypothesis is provided by the negative correlation of the amount variable in the
TABLE 11
STEPWISE REGRESSION ANALYSIS OF TELEVISION VARIABLES AS PREDICTORS OF READING VARIABLES
MALES

<table>
<thead>
<tr>
<th>Criterion (Dependent) Variable</th>
<th>Step</th>
<th>Variable Added</th>
<th>Direction</th>
<th>Multiple Regression Equation</th>
<th>Predictor Variables</th>
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<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
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</tr>
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*p .05  **p .01
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<th>Criterion (Dependent Variable)</th>
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<th>Direction</th>
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<td>NEG</td>
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*p<.05  
**p<.01  
***p<.001
TABLE 12 (Continued)

STEPWISE REGRESSION ANALYSIS OF TELEVISION VARIABLES AS PREDICTORS OF READING VARIABLES

FEMALES

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<th>Variable Added</th>
<th>Direction</th>
<th>Multiple Regression Equation</th>
<th>Predictor Variables</th>
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*p<.05  
**p<.01
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*p < 0.05

**p < 0.01
TABLE 14
INTERCORRELATIONS OF PREDICTOR VARIABLES
FEMALES

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<th>IMPRV</th>
<th>WRAT</th>
<th>COMPR</th>
<th>VER</th>
<th>PER</th>
<th>SIM</th>
<th>VOC</th>
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</table>

*p<.05  
**p<.01
stepwise regression model for females.

The secondary analyses concern the Escape/Involved dimension. These are not considered part of the main analyses because of the great complexity of dealing with all the 10 criterion variables at one time. Nevertheless, a brief overview of the actions of these variables may add insight to the study.

From Tables 3 and 4 it is indicated that RESC correlates negatively with IMAW and negatively with PER, SIM, and COG for males; RESC does not correlate significantly with any variables for females. RINV and TINV do not correlate significantly with the predictors for males; RINV does not correlate significantly with any predictors for females. TINV correlates significantly with STDW and IMPRV (Negatively). TESC correlates significantly with STDW, COMPR, VER, and PER--all negatively--for males; and does not correlate significantly with any predictor variables for females.

The complex interactions of the Escape/Involved variables with the other criterion variables (Tables 9 and 10) indicate that these dimensions are very different for males and females. There is hardly any difference between RINV and TINV for females, and hardly any difference between RESC and RINV for females, in the interaction with other variables, while there is great difference between these sets of variables for males.
The greater homogeneity among the variables for females suggests the escape/involvement may not be very different dimensions for females, while they may be very different dimensions for males.

The escape/involved variables indicate very different results for males and females in the stepwise regression analyses on television (Tables 5 and 6). For males, TESC is predicted by PER (Negative), IMPRV, COMPR (negative), and WRAT. TINV for males and TESC for females were not predicted by any variables. TINV for females was predicted by IMPRV (negative), PA, and IMAW.

The regression analyses on reading (Tables 7 and 8) indicated that only for RESC (males) was there any significant prediction—RESC was predicted by PER (negative) and PA.
CHAPTER V
DISCUSSION

This chapter is divided into three parts: 1) a consideration of the findings related directly to the three research hypotheses; 2) discussion of the additional information provided by the escape/involved variables; and 3) implications of the present study and future research possibilities. The reader is reminded of the listing and explanation of research variables on pages 38 to 40.

The Research Hypotheses

Hypothesis one states that internal imagery is inversely related to television watching. Not only was this not supported by the data, but the opposite was strongly supported. The amount variable had been considered too erratic as the study progressed, to allow any clear results. But, in Table 5, television amount (TAMT) was predicted significantly by IMAW (the imagery word pairs) for males. To lend further validity to this finding, comprehension (COMPR) entered into the model, and in a negative direction, indicating that the lower the comprehension, the more television was watched,
or that high comprehension was associated with low amounts of television watching.

It is somewhat surprising to discover that imagery ability predicts television amount, but does not predict reading amount for males (Table 11). This suggests an opposite premise than the one upon which this study began: that since television provides images, long and frequent television watching would prevent the watcher from developing imagery, or the ability to conjure images at will, especially while reading. This finding seems to suggest, however, because there is a strong relationship between television amount and imagery ability, that television's role of providing images might support or reinforce imagery ability. Television watching might supply a person with a large repertoire of images from which he can draw at will.

The difficulty inherent in such a hypothesis is one suggested by Mander (1975) concerning the question of whose images are being discussed. The reader might imagine a book he or she has read after which the movie was also seen.

If you read, say, Gone with the wind, Roots, Marjorie Morningstar or From here to Eternity, or heard any radio show such as "The Lone Ranger" first, you created your own internal image of the events described while you read or listened. You imagined the characters, the events and the ambience. You made pictures in your mind. These pictures were
yours. Of course they were influenced by the author—what he or she told you—but the creation of the actual image was up to you. Marjorie Morningstar was an image in your mind before you saw the film. Then you saw the film with Natalie Wood playing Marjorie. Once you had seen Natalie Wood in the role, could you recover the image you had made up? Marjorie became Natalie Wood from that point on. So we can say that when your self-produced image was made concrete for you, your own image disappeared.
(Mander, 1978, pp. 241-242)

If television does indeed enhance imagery, then there would appear to be huge numbers of people who possess a very restricted assortment of images.

Television intensity and cognitive awareness for males, and television cognitive awareness for females, were similarly predicted by imagery. This could be considered less surprising than the amount variable because of the nature of intensity and cognitive awareness. As will be seen in the analysis of Hypothesis three, the intensity and cognitive awareness measures relate more to personality traits than to either television or reading behaviors.

Hypothesis two was well supported by strong prediction of reading intensity (RINT) and reading cognitive awareness (RCOGAW) for males, and RCOGAW for females, by the imagery instruction word pairs (IMAW). An interesting result occurred for reading intensity and reading cognitive awareness for males, and reading intensity for females.
When the improve variable (IMPRV) (imagery word pairs minus the standard word pairs) was entered into the model, it correlated negatively with the criterion variables. The higher a subject scores in intensity or cognitive awareness, the lower his or her IMPRV score, or conversely, the lower the intensity or cognitive awareness, the higher the IMPRV score. Highly intense-reading males and females performed less well when given the imagery instructions. This did not occur for both males and females on RCOGAW (reading cognitive awareness); for males, the improve (IMPRV) variable correlated negatively; for females, it correlated positively. This gives rise to two questions.

First it is necessary to ask whether, in fact, subjects did improve significantly from standard word pairs (STDW) to imagery instruction word pairs (IMAW). Two t-tests were performed to answer this question. For both males and females the difference was significant beyond the .01 level (t (males) = 4.20; t (females) = 3.74). In general it may be said that subjects profited from the imagery instructions, and thus from an imagery approach to memorizing the word pairs.

If people do profit from an imagery approach, how is it that the improve (IMPRV) variable, which measures improvement, can correlate negatively with one variable, when IMAW itself correlates positively with the same
variable? To answer this, an analysis was performed on the RCOGAW (reading cognitive awareness) variable for both males and females. Tables 15 and 16 present these results. The RCOGAW variable has been divided at the 50 percent point for each group, in order to compare the imagery variables for high versus low cognitively aware subjects. The mid-point is 7 for males, and 13 for females. The TCOGAW variable ranges from 0 to 18; the STDW (standard instruction word pairs) and IMAW (imagery instruction word pairs) variables range from 0 to 30; and the IMPRV (improve) variable ranges from -11 to 20.

**TABLE 15**

ANALYSIS OF RCOGAW VARIABLE FOR MALES

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<th>Predictor</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
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<th>Maximum Value</th>
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<td>2.83</td>
<td>3.85</td>
<td>-3</td>
<td>14</td>
</tr>
<tr>
<td>RCOGAW Subjects Scoring 7 to 18</td>
<td>18</td>
<td>15.94</td>
<td>7.20</td>
<td>4</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>17.83</td>
<td>7.26</td>
<td>1</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>1.89</td>
<td>5.99</td>
<td>-8</td>
<td>13</td>
</tr>
</tbody>
</table>

From this it can be seen that the higher scoring males on reading cognitive awareness (RCOGAW) obtained a lower mean on IMPRV, and more importantly, obtained
TABLE 16
ANALYSIS OF RCOGAW VARIABLE FOR FEMALES

<table>
<thead>
<tr>
<th>Predictor</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>Minimum Value</th>
<th>Maximum Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCOGAW Subjects Scoring</td>
<td>STDW</td>
<td>12</td>
<td>12.75</td>
<td>6.12</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>IMAW</td>
<td>12</td>
<td>15.92</td>
<td>5.60</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>IMPRV</td>
<td>12</td>
<td>3.17</td>
<td>7.70</td>
<td>-11</td>
</tr>
<tr>
<td>RCOGAW Subjects Scoring</td>
<td>STDW</td>
<td>11</td>
<td>13.72</td>
<td>3.88</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>IMAW</td>
<td>11</td>
<td>21.18</td>
<td>4.26</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>IMPRV</td>
<td>11</td>
<td>7.45</td>
<td>5.24</td>
<td>-1</td>
</tr>
</tbody>
</table>

a much greater range of scores, i.e., from -8 to 13.

High scoring reading cognitive awareness (RCOGAW) males, then, tended to have high STDW (standard instruction word pairs) scores, and their scores decreased when they were asked to use an imagery approach to memorizing word pairs. There are two possible reasons for this finding.

First, the STDW score is composed of the initial two sets of 15 word pairs. Approximately 15 minutes were required to progress through these words to arrive at the imagery instructions and imagery word pairs. A concentration or attention factor may have been operating whereby high scoring subjects on the first word pairs were not able to maintain the high level of concentration necessary to achieve a high score on four sets of word pairs in a row. This might be considered a ceiling effect. The subjects performed too well on the first sets of words
to maintain their proficiency throughout the test.

A second phenomenon that may have occurred can be termed "self-conscious inhibition." It was reported by some of the subjects in informal interviews, directly after testing, that the imagery instructions did not help because they already use some form of imagery for memorization automatically. Requesting an imagery approach from these subjects caused them to be self-conscious about their memorization technique, something that may have interfered with performance.

The analysis of RCOGAW (reading cognitive awareness) for females clearly shows they did profit from the imagery instructions. For example, the range of scores for IMPRV (improve) is -11 to 20 for the bottom half of the group, while it is only -1 to 16 for the top half. The mean for IMPRV increases from 3.17 to 7.45.

Comparing reading directly to television watching (Hypothesis three, Tables 11 and 12) is a complicated proposition. An immediate problem is that when one is watching television one is not reading. High television watching will tend to displace reading. If television watching and recreational reading were demonstrated to be significantly opposite activities, this investigator had tried to show that this was so because high television watchers were not high imagers, and therefore did not read because they did not enjoy "imageless" reading. Or, even
if when reading, youth were able to conjure up a fair amount of images, the reward was not worth the effort when compared to watching television because television provided the images while reading did not.

This simply did not prove to be the case. Tables 11 and 12 are the results of the analyses undertaken to test this point directly. In order to support the hypotheses just presented, the dependent variables--RAMT (reading amount), RINT (reading intensity), and RCOGAW (reading cognitive awareness)--would have had to have been predicted in a negative direction by any or all of the television variables: TAMT (television amount), TINT (television intensity), or TCOGAW (television cognitive awareness). It should be obvious that this just did not happen. The opposite, in fact, is the result.

Television intensity predicts reading intensity, and television cognitive awareness predicts reading cognitive awareness. Intensity and cognitive awareness appear to be personality characteristics which override or overshadow the particular activity that happens to be the focus of attention (reading or television watching). It cannot be said, from the present findings, that television watching has a negative effect on intensity toward or cognitive awareness of reading.

Imagery has not proved to be the pivotal or medial factor in the relationship between television and reading.
Rather, all three variables—television, imagery, and reading—are related to intensity and cognitive awareness; variables which seem to be acting as broader personality characteristics. An intense person tends to be high in imagery, and this person will approach both television and reading activities in an intense manner. This presumably would apply to other activities as well. Cognitively aware people tend to be superior imagers. They are aware in their reading as well as their television watching.

There apparently are different ways to watch television and different ways to approach reading. A highly intense and cognitively aware person might be very selective about the programs he or she watches and the things that he or she reads. A person receiving a low score on intensity and cognitive awareness might watch television just for the sake of the experience without very much regard for content; such a person might also read a wide variety of sources also without great concern about content. There is, for example, a current profusion of easy-reading books whose content does not require sustained concentration. As a result, these books can be laid aside and resumed at a later time without any particular problem. While it is apparent that millions of paperbacks are still sold every year, a small sensation was created by the recent opening of Books & Company, a
new book store in New York City. Its specialty is the careful collection by the owner of many examples of classic literature which are generally not available in book stores throughout the country. Although large quantities of books are still sold in this country, the general quality may be mediocre. The owner of Books & Company noted that it was extremely difficult for him to purchase many books from publishers simply because their low sales volume did not warrant any special attention.

The Escape/Involved Variables

To help define the purpose behind a subject's approach to an activity and to shed more light on the intensity and awareness factors, the escape/involved measures were integrated into all of the analyses. These indicate the orientation of a subject toward the reading or television activity. Does a subject use television to "get away from it all" (escape), or to learn or to identify with characters (involved)? Although these variables proved to be complex and difficult to characterize, they do indicate a definite trend in male female differences.

Analysis of Tables 5, 6, 7, 8, 11, and 12 indicates that the male subjects use television primarily for escape and that female subjects use television primarily as an involved activity. For males, television escape (TESC) is predicted by improvement (IMPRV) and the
Wide Range Achievement Test (WRAT) in a positive direction, and by performance (PER) and comprehension (COMPR) in a negative direction. Reading escape (RESC) is predicted primarily by television escape (TESC). Males do not identify with what they read or watch on television. They presumably engage in these activities to counteract boredom, or to get away from the demands of the day.

Females identify with television characters and/or find the content of television to be of interest. On the other hand, reading involvement was not significantly predicted by any variables, so it cannot be said that females become involved in that activity. It is not possible to tell from the data whether females are in fact more particular than males about what they watch on television.

It is interesting to note that the orientation of a subject toward either television watching or recreational reading does not relate to other abilities. For example, reading for escape for males seems to mediate against imagery ability. If reading escape (RESC) and television escape (TESC) are added together (Table 3) they correlate negatively with almost all of the predictor variables. It would seem that the group at risk for imagery and conceptual difficulties is the escapist males.
Implications and future research

From the results of the present study it is not possible to implicate the watching of television in the decrease in reading aptitude of recent years. This study does not provide the data to show that television watching involves any specific effects for the watcher. Rather, this study has indicated that factors other than amount of watching are involved in the level of imagery and reading ability of an individual. Television watching does not seem to be able to have a significant effect upon a person when compared with more basic characteristics as intensity and cognitive awareness.

This study suggests that there exists a cycle of interaction among the variables of television, imagery, reading, intensity, and cognitive awareness. Individuals who are low in intensity and cognitive awareness will tend to be lower in imagery ability, and will further tend to read less and watch more television. Highly intense and aware individuals, conversely, should be able to watch large amounts of television without significant negative effects upon imagery and reading ability.

Individuals who use activities such as television and even reading, primarily for purposes of escape do not gain from these activities in abilities such as imagery, as do individuals who are oriented toward these same activities in an involved manner.
The amount variable might have proved more useful if it had been refined and expanded. Self report of such information is in itself difficult to analyze, even with more refined measures.

The variables of intensity, cognitive awareness, involvement, and escape are good potential discriminators of individuals. Extreme groups, defined by these variables (e.g., low intensity, low awareness, uninvolved, escapist individuals) could be studied. Their choice of media, use of media, preference for different books and shows might help describe the relationship of media usage to personality.

Imagery research has advanced to the point where it has a great deal to offer to the media research field. The importance of imagery in human development has been well documented. Mass media is very much the business of the transmission of images on an immense scale. It is clear that these images have a great deal of power and influence. The interface between imagery and mass media research is an area worth studying and may well become more important in the future. As media advances and becomes more sophisticated psychologists should one day be in the position of helping future generations to create images that are their own, in addition to those of CBS, NBC, ABC, and Madison Avenue.
The concern for the effects of media in the future that this investigator feels is well expressed in a letter to the editor of *Science* (vol. 203, Feb 2, 1979) by Singer and Singer:

As researchers investigating the effects of television on children, we were naturally delighted to read about the important effort to develop a TV science show for children... There is such a paucity of thoughtful programming directed at children on television, particularly on commercial networks, that any serious effort in this respect is to be commended.

We were somewhat concerned, however, about the reference to "concocting a hit" in the last paragraph of the article. We think it would be a mistake to attempt to bring programming down to the lowest common denominator in order to get a huge audience. The danger here is one of continuing what is already an unfortunate practice on television--speeded-up presentations, heavy emphasis on humor, and quick "blackout sketches." Cognitive psychology research suggests that extremely rapidly paced material, even if capable of holding one's attention, may not lead to effective learning. It would be a shame to continue some of the practices of other children's programming, in which maximizing the "orienting reflex" in order to hold attention precludes allowing time for the observers' thoughtful reflections. A kind of "savouring" of the material through mental replay can occur if the action moves along at a more normal pace. Good programming with serious intent will find its audience without having to sacrifice genuine comprehension and an active interest on the part of the viewer (p. 400).

Active involvement of psychologists such as Singer and Singer will be necessary if television programming is to progress along the lines that were mentioned in the above letter.
APPENDIX A
Paired-Associate Word Pairs
Transcripts of Instructions,
Lists One through Four
Paired-Associate Word Pairs:

Transcript of instructions

Standard Paired-Associate Instructions

Instructions were taped and the tape played back for all subjects. The Experimenter added verbal instructions only when specifically asked.

"I will read two lists of words. Each list will contain 15 pairs of words. After I read each pair, I will give you about ten seconds to think about it. After this ten seconds, another pair will be presented. When the 15-pair list has been completed, you will be given a test to determine how well you have remembered the word pairs. The test will be a written list containing one word from each pair. You are asked to fill in the second word from the pair from memory. Please listen carefully, and concentrate as well as you can. If you have any questions, please ask them now."
WORD PAIRS ONE:

1. ankle  (forest)
2. cell  (iron)
3. lake  (plant)
4. fox  (friend)
5. skin  (table)
6. cat  (mountain)
7. hotel  (pole)
8. gentleman  (window)
9. coin  (wine)
10. hall  (circle)
11. army  (shore)
12. money  (body)
13. king  (baby)
14. palace  (blood)
15. bird  (cotton)
<table>
<thead>
<tr>
<th>Word Pair Two:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. arrow</td>
<td>(factory)</td>
</tr>
<tr>
<td>2. hospital</td>
<td>(wheat)</td>
</tr>
<tr>
<td>3. engine</td>
<td>(market)</td>
</tr>
<tr>
<td>4. priest</td>
<td>(flower)</td>
</tr>
<tr>
<td>5. elephant</td>
<td>(bronze)</td>
</tr>
<tr>
<td>6. diamond</td>
<td>(apple)</td>
</tr>
<tr>
<td>7. meat</td>
<td>(jury)</td>
</tr>
<tr>
<td>8. lip</td>
<td>(beaver)</td>
</tr>
<tr>
<td>9. grandmother</td>
<td>(toy)</td>
</tr>
<tr>
<td>10. woods</td>
<td>(doctor)</td>
</tr>
<tr>
<td>11. earth</td>
<td>(coffee)</td>
</tr>
<tr>
<td>12. building</td>
<td>(blossom)</td>
</tr>
<tr>
<td>13. beggar</td>
<td>(prairie)</td>
</tr>
<tr>
<td>14. storm</td>
<td>(pupil)</td>
</tr>
<tr>
<td>15. valley</td>
<td>(arm)</td>
</tr>
</tbody>
</table>
Paired-Associate Word Pairs:

Transcript of Instructions

Imagery Paired-Associate Instructions

"You will be read two lists of words. These words will be presented two at a time. After each list has been presented, you will be given a written list containing one word from each pair. You are asked to fill in the other word from the pair from memory.

"A method that often helps in remembering word pairs, is the use of visual images, or mental pictures. That is, if given the word pair: "whale-cigar," you would imagine a whale smoking a cigar. Or, if the word pair was: "bicycle-dog," you might imagine a dog riding a bicycle, or a dog chasing a bicycle. You will be read 15 pairs of words. After each pair is read, you will be given approximately ten seconds to form your visual image. After this ten seconds, another word pair will be presented. When the 15-pair list has been completed, you will be given a test to determine how well you have remembered the word pairs. Please listen carefully, and concentrate as well as you can. If you have any questions, please ask them now."
WORD PAIRS THREE:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. grass</td>
<td></td>
<td>(butter)</td>
</tr>
<tr>
<td>2. tower</td>
<td></td>
<td>(mosquito)</td>
</tr>
<tr>
<td>3. refrigerator</td>
<td></td>
<td>(accordion)</td>
</tr>
<tr>
<td>4. pencil</td>
<td></td>
<td>(ambulance)</td>
</tr>
<tr>
<td>5. daffodil</td>
<td></td>
<td>(cabin)</td>
</tr>
<tr>
<td>6. door</td>
<td></td>
<td>(hammer)</td>
</tr>
<tr>
<td>7. potato</td>
<td></td>
<td>(beaver)</td>
</tr>
<tr>
<td>8. sugar</td>
<td></td>
<td>(oven)</td>
</tr>
<tr>
<td>9. kettle</td>
<td></td>
<td>(strawberry)</td>
</tr>
<tr>
<td>10. arrow</td>
<td></td>
<td>(ticket)</td>
</tr>
<tr>
<td>11. lawn</td>
<td></td>
<td>(automobile)</td>
</tr>
<tr>
<td>12. leopard</td>
<td></td>
<td>(guardhouse)</td>
</tr>
<tr>
<td>13. truck</td>
<td></td>
<td>(caterpillar)</td>
</tr>
<tr>
<td>14. car</td>
<td></td>
<td>(shoe)</td>
</tr>
<tr>
<td>15. book</td>
<td></td>
<td>(mast)</td>
</tr>
</tbody>
</table>
WORD PAIRS FOUR:

1. banker (fisherman)
2. doll (lemon)
3. insect (bar)
4. fire (machine)
5. kiss (prison)
6. party (dollar)
7. magazine (corn)
8. candy (city)
9. officer (ship)
10. railroad (village)
11. elbow (paper)
12. water (armadillo)
13. board (forehead)
14. wife (string)
15. tree (clothing)
APPENDIX B

Television-Watching Questionnaire
TV WATCHING QUESTIONNAIRE

The following are statements that may or may not be true about you. Please answer the way you think you would feel most of the time.

1. At home, I usually watch TV in:
   A) The living room
   B) My bedroom
   C) My Parents' bedroom
   D) A family room
   E) the kitchen

2. Most of the time, I watch TV:
   A) Alone
   B) With my brothers) or sister(s)
   C) With my parents
   D) With family and/or friends

3. This is a list of possible reasons for watching television. Check one of the five possible answers for each statement.
   Strongly Agree = SA; Agree = A;
   Disagree = D; Strongly Disagree = SD

   Because there is nothing else to do at the time.
   SA____ A____ D____ SD____

   To get away from people.
   SA____ A____ D____ SD____

   To get away from work or trouble.
   SA____ A____ D____ SD____

   To have some company.
   SA____ A____ D____ SD____

   Because I might be able to learn something.
   SA____ A____ D____ SD____

   Because I might be missing something.
   SA____ A____ D____ SD____
Because somebody else in the house is watching.
SA___ A____ D____ SD____

Because I want to be able to talk to my friends about what I watch.
SA___ A____ D____ SD____

Because I just like watching.
SA____ A_____ D____ SD____

Because it is a special show that I really like.
SA____ A_______ D____ SD____

4. My three favorite TV programs (programs I watch whenever I can) are:
A) __________________________________________________
B) __________________________________________________
C) __________________________________________________

5. Two of my favorite characters in each of my favorite TV shows are:
A) First favorite TV show:
  1) ______________________________________________
  2) ______________________________________________
B) Second favorite TV show:
  1) ______________________________________________
  2) ______________________________________________
C) Third favorite TV show:
  1) ______________________________________________
  2) ______________________________________________
6. The last time I watched, this is what happened (this was the story) of each of my three favorite TV shows:
A) First favorite TV show:

B) Second favorite TV show:

C) Third favorite TV show:

7. I watch something on television:
A) Every night of the week
B) Most nights
C) three or four nights a week
D) one or two nights a week
E) hardly ever

8. I usually watch television at night for:
A) Less than one hour
B) About two hours
C) About three hours
D) About four hours
E) More than four hours

9. I am allowed to watch television whenever I want.
SA_____ A_____ D_____ SD_____ 

10. I often have disagreements with my parents about the amount of time I spend watching television.
SA_____ A_____ D_____ SD_____
11. If I had a choice of any of my favorite activities (not including television) and watching one of my three favorite television shows, I would choose the television show:

Always  Most of A lot of Some  Never
the time the time times

12. If I had a choice of any of my favorite activities (not including television) and watching an average television show (NOT one of my favorites), I would choose to watch television:

Always  Most of A lot of Some  Never
the time the time times

13. When I watch TV, I often feel that I am actually experiencing what I am watching.

SA  A  D  SD

14. I find it easy to remember things that I watch on TV.

SA  A  D  SD

15. Most of the TV shows that I watch seem realistic (real) to me.

SA  A  D  SD

16. Sometimes I watch a TV show and imagine that I am actually one of the people in the story.

SA  A  D  SD

17. I find it hard to watch TV when someone is on the telephone in the next room.

SA  A  D  SD
APPENDIX C

Recreational Reading Questionnaire
READING QUESTIONNAIRE

The following are statements that may or may not be true about you. Please answer the way you think you would feel most of the time. Each statement has five possible answers:

Strongly Agree = SA
Agree = A

Disagree = D
Strongly Disagree = SD

1. This is a list of possible reasons for reading. Answer each as you think it applies to you most of the time:

Because there is nothing else to do at the time.
SA____ A____ D____ SD____

To get away from people.
SA____ A____ D____ SD____

To get away from work or trouble.
SA____ A____ D____ SD____

To have some company.
SA____ A____ D____ SD____

Because I might be able to learn something.
SA____ A____ D____ SD____

Because I might be missing something.
SA____ A____ D____ SD____

Because somebody else in the house is reading.
SA____ A____ D____ SD____

Because I want to be able to talk to my friends about what I read.
SA____ A____ D____ SD____

Because I just like reading.
SA____ A____ D____ SD____

Because it is a special story that I really like.
SA____ A____ D____ SD____
2. My three favorite books or stories are:
   A) ________________________________________________________
   B) ________________________________________________________
   C) ________________________________________________________

3. Two of my favorite characters in each of my favorite books or stories are:
   A) First favorite book or story:
      1) ________________________________________________________
      2) ________________________________________________________
   B) Second favorite book or story:
      1) ________________________________________________________
      2) ________________________________________________________
   C) Third favorite book or story:
      1) ________________________________________________________
      2) ________________________________________________________

4. This is what my favorite books or stories were about:
   A) First favorite book or story:
      __________________________________________________________
      __________________________________________________________
         
   B) Second favorite book or story:
      __________________________________________________________
      __________________________________________________________
         
   C) Third favorite book or story:
      __________________________________________________________
      __________________________________________________________
5. I read something (book, story, magazine)(not counting comics):
   A) Most evenings_____  
   B) 3 or 4 evenings a week_____  
   C) 1 or 2 evenings a week_____  
   D) Sometimes, but not regularly_____  
   E) Hardly ever, or Never_____  

6. I usually read in the evening for:
   A) Less than one hour_____  
   B) About 2 hours _____  
   C) About 3 hours _____  
   D) About k hours _____  
   E) More than k hours _____  

7. In my spare time (not including reading) I like to:
   A) Play sports:
      Always_____  Most of _____  A lot of _____  Some _____  Never _____  
      the time  the time  times  
   B) Hang around with friends
      Always_____  Most of _____  A lot of _____  Some _____  Never _____  
      the time  the time  times  
   C) Watch T.V.
      Always_____  Most of _____  A lot of _____  Some _____  Never _____  
      the time  the time  times  
   D) Listen to records
      Always_____  Most of _____  A lot of _____  Some _____  Never _____  
      the time  the time  times  
   E) Listen to the radio
      Always_____  Most of _____  A lot of _____  Some _____  Never _____  
      the time  the time  times  
   F) Other (Please write it out)

________________________________________________________________________

Always_____  Most of _____  A lot of _____  Some _____  Never _____  
the time  the time  times
8. If I had a choice of any of the activities just mentioned and reading one of my three favorite books of stories, I would choose the book or story:

Always____ Most of ____ A lot of ____ Some ____ Never ____
the time the time the time times

9. If I had a choice of any of the activities just mentioned and just reading a book or story (NOT one of my favorites), I would choose the book or story:

Always____ Most of ____ A lot of ____ Some ____ Never ____
the time the time the time times

10. When I read, I often feel that I am actually experiencing what I am reading.
SA____ A_______ D____ SD____

11. I find that it is easy to remember things that I read.
SA____ A_______ D____ SD____

12. Most of my favorite stories that I read seem realistic (real) to me.
SA____ A_______ D____ SD____

13. Most of the stories that I read seem realistic (real) to me.
SA____ A_______ D____ SD____

14. Sometimes I read a story and I imagine that I am actually one of the people in the story.
SA____ A_______ D____ SD____

15. I find it hard to read when someone is on the telephone in the next room.
SA____ A_______ D____ SD____

16. I find it hard to concentrate (stick to a task such as reading) when there is a T.V. or radio on.
SA____ A_______ D____ SD____

17. I can study or read well in a noisy room.
SA____ A_______ D____ SD____
APPENDIX D

A Brief Explanation of
the Stepwise Multiple Regression Tables
A Brief Explanation of
the Stepwise Multiple Regression Tables

To the writer's knowledge, no standard format for reporting results of multiple regression analyses has yet been developed. To facilitate the use and understanding of the stepwise regression tables, this brief explanation is provided. The Tables involved are: Table 5 (p. 48); Table 6 (p. 49); Table 7 (p. 51); Table 8 (p. 52); Table 11 (p. 56); and Table 12 (pp. 57-58).


Decision rules such as the number of predictor variables allowed in each model, and the F required to allow a step to remain in the model, come from: Wherry, R. J., Sr. Underprediction from overfitting: 45 years of shrinkage. Personnel Psychology, 1975, 28, 1-18.

The following section explains the Stepwise regression tables heading by heading:

Criterion (Dependent) Variable: This is the variable upon which the analysis is being performed. These variables are those listed as the Dependent Variables for the study (pp. 39-40).
Step: From the predictor variables entered into an analysis, a regression model is calculated, and the best single predictor is chosen. This is the one variable which accounts for the greatest amount of variability in the dependent variable. This is Step 1. A second analysis is then performed with the remaining predictors, again looking for the best single variable which will explain the greatest variance in the dependent variable over and above the variance already accounted for by the variable in Step 1. This is Step 2. It will be noted that the number of steps vary from model to model. As the regression sequences proceed, each successive variable entered into the model accounts for less and less of the total variability in the dependent variable. A point of diminishing returns is quickly reached, where, for example, addition of another predictor will account for merely .02 of the total variance. These steps are left out of the tables, even though the computer often prints far more variables than are reported.

The decision to leave a variable out of the model is dictated by its F ratio, which must exceed 1.00 (Wherry, 1975).

Variable Added: This names the predictor variable which is being entered into the model.
Direction: This indicates whether the variable named (the predictor) is related to the dependent variable in a positive or negative direction. A positive relationship indicates that as the dependent variable increases, the predictor variable also increases. In a negative relationship, as the dependent variable increases, the predictor decreases, or vice versa.

$df_{tt}$: indicates the Total degrees of freedom in the model (equal to the number of subjects).

$df_{E}$: indicates the Error degrees of freedom, which is in effect equal to the Total degrees of freedom minus the number of predictor variables entered into the model.

$R^2$: the square of the multiple correlation coefficient. This indicates the total amount of Variance of the dependent variable accounted for by the predictor(s) entered into the model.

$F$: This is a ratio of the regression sum of squares of the variable for which it is listed, to the total sum of squares. It indicates the significance of the contribution of that variable to the total explanation of variance in the model.

Name: For each step in the Stepwise regression model, all of the variables entered as predictors are listed in order of entry. The relative significance of each individual variable changes as the number of variables involved
in the model increases. Therefore, every time a new variable is added, all the previous variables must be listed, with the new F-ratio (or significance of that variable in explaining variance in the dependent variable) indicated for each.
APPENDIX E

Anecdotes
In the process of conducting a formal study, it is to be expected that a certain amount of interesting and valuable information gathered by the investigator will not be integrated directly into the planned results. This does not lessen the value of the findings, and this short section has been written to provide the reader with some of these findings.

This investigator seriously believed that the subjects involved in the study should be introduced to as much of the study and its concepts as they desired. Consequently, as part of the debriefing procedure, this investigator made a serious attempt to involve the subjects in discussion about the tests they had taken, and asked their reactions and opinions. Despite all the planning that goes into a study such as this, mistakes are made, and establishing a modicum of rapport with one's subjects is invaluable. The following is an example of this, and also provides an interesting validation of Paivio, Yuille, & Madigan's (1968) list of high and low imagery nouns.

Of the four word pair lists presented in Table A, Lists One and Three were originally different. They were composed of Low Imagery, High meaningfulness nouns. The idea was to enable the investigator to better assess the impact of imagery by comparing high and low imagery words of equal meaningfullness. This proved to be
quite impossible, and the first eight subjects informed
the investigator of this, at his prompting, quite
vociferously. A sample of the original follows:

| honor   | freedom |
| pledge  | advice  |
| hope    | position|
| chance  | spirit  |
| sensation | greed |
| style   | cost    |
| tribute | trouble |
| justice | effort  |
| interest| thought |
| majority| necessity|
| crisis  | origin  |

If the reader will refer to the imagery instructions in
Appendix A, he/she will most likely find it rather
impossible to either form a mental picture from these
word pairs, or even to memorize many of these word pairs.
The subjects involved with the testing averaged no more
than three words remembered from the 15 pair lists One
or Three. The problem became more difficult when the
imagery instructions were given and they performed worse
on word pairs Three than on Two!

When the investigator asked subjects to relate their
feelings about the imagery instructions--as to whether
they liked the idea and found it profitable--most subjects
answered in the affirmative. A few, however, said that they
did not specifically profit from the imagery instructions
because they already employed imagery as their memorization technique. They did not find this remarkable, but mentioned it as a matter of course, as if they were aware of the process prior to the testing or my questioning.

For the Cognitive Awareness part of the Questionnaires, subjects had to write their favorite television shows or books. For television, the most popular two television shows—by far—were "Starsky and Hutch" (rated the most violent show on television) and "Charlie's Angels" (minimum plot, maximum sex and violence). Following these were: "The Incredible Hulk" (based on a Marvel Comic series), "The Jeffersons" (A poor black family who becomes middle-class), "Baretta" (undercover police—mostly violence), and "The Love Boat."

Favorite book selections exhibited a wider range of selection so that there are no obvious favorites. Most frequently mentioned was "Jaws," followed by "The Hobbit," and "Helter Skelter."

Finally, the potential problem of cheating should be mentioned. The reader will note (from Appendix A) that it is very easy to cheat on the word pairs. There is plenty of space to write large words if subjects wanted to help each other. Placement of seats was such that it was impossible to prevent cheating. The investigator told the subjects that would not help them, but would sorely
impair the validity of the study. In addition, it was said that they probably could get away with cheating if they really tried. All test booklets were checked directly after testing for obvious overlapping of words and other signs of cheating. Not one instance of copying was discovered in all of the original 109 test booklets.
LIST OF REFERENCES


Brazelton, T. B. How to tame the TV monster. Redbook, 1972, 140.


