VERBALISM AND AFFECTIVE MEANING FOR BLIND, PARTIALLY SEEING AND NORMALLY SIGHTED SCHOOL AGED CHILDREN

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Clesson J. Martin
Major Professor

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ABSTRACT

VERBALISM AND AFFECTIVE MEANING
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By

Richard Melvin DeMott

The experimental research reported herein is designed to assess the effects of vision and verbalism upon the affective meanings of words. Major focus centered upon comparing the evidence supporting either of two explanations of how words acquire meaning. Comparisons were made between words which acquired meanings through association with the object they represented and words which acquired meaning primarily through associations with other words in the language.

Blind Ss identified as high verbalizers were compared with low verbalizer blind Ss and blind, partially seeing and normally sighted Ss were compared in the affective meanings given words. Meanings were compared for words representing concepts or objects in one of the following catagories, (1) abstract concepts, (2) concrete objects seldom identified tactually by blind Ss, and (3) objects having visual connotations or components.

Three vision samples participated and were made up of 41 blind, 41 partially seeing and 61 normally sighted Ss. Blind and partially seeing Ss were matched on age, grade, sex, and I. Q. with normally sighted Ss.

All blind, partially seeing and all normally sighted Ss in grades one through five were administered a 39 item vocabulary list

of nouns. This was followed by presentation of the actual objects named on the list which the Ss were requested to name. The difference between the number of words correctly defined and the number of objects correctly identified was used as a measure of verbalism. Subsequent to obtaining verbalism scores, all Ss were administered a semantic differential in which 15 words were rated on 15 different adjective scales.

Analysis using a factor analytic technique revealed three primary factors which were labeled evaluation, potency, and activity. The same adjective scales loaded on each of the factors for all three vision samples.

When the 41 blind Ss were divided at the mean by grade into high and low verbalism samples, no significant differences in meaning were found. Also, analysis of variance revealed no group differences between blind, partially seeing and normally sighted Ss in the affective meanings given the 15 concepts.

Factor analysis of concepts revealed very similar factors across the three vision samples. Three major factors were identified and labeled high evaluative, low evaluative and object concrete. A fourth factor which could not be defined, was revealed for the normally sighted sample.

Analysis of variance revealed no significant differences between the three vision samples for vocabulary. Comparison on verbalism resulted in significant differences between each of the three samples.

The results demonstrate that degree of vision does not affect the meanings ascribed to concepts which vary in concreteness, visual

connotation, and ease with which the objects they represent can be tactually identified. Such results indicate that while associations between words and the objects they represent are very different for the three vision samples, the meanings attached to those words remain stable.

Since blind Ss give affective meanings to words which are not significantly different from affective meanings given by sighted Ss, the conclusion was made that a word-word association model provides the most accurate explanation of how words acquire meaning for the blind.

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By

Richard Melvin DeMott

A THESIS

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DEDICATION

This dissertation is affectionately dedicated to two great fellows, Jeff and Tim, who have been on shared time with their dad's Ph. D.

ACKNOWLEDGEMENTS

The research reported herein represents a cooperative effort on the part of many individuals who contributed considerable time and energy toward its completion.

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translating raw data; and to Dale DeMott who devoted immeasurable time to programing the several computer analyses and served as consultant in their use.

A very special thanks goes to my wife, Roberta, who served in every phase of the experiment as examiner, scorer, editor and typist and who constantly offered encouragement when completion seemed impossible.

Finally, appreciation is extended to the 143 students of Michigan School for the Blind, Ashley Community Schools and Stone Elementary, North Intermediate and Arthur Hill High Schools of Saginaw who served as the subjects in the research. Without their cooperation and assistance there would have been no study.

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CHAPTER I

INTRODUCTION AND REVIEW OF THE LITERATURE

Statement of Problem

Ideally, to be able to re-create an environmental situation in toto would be the perfect way to communicate the information it contains. Since it is not possible for one to provide ready-made environmental situations for the purpose of communicating information about objects, events, qualities or feelings, the problem of communication is much more difficult than it might be were such possible.

Fortunately, the human being has at his disposal an apparatus fitted for verbal communication which, next to an exact re-creation of a given environment, provides an acceptable means for conveying information from one individual to another. By the use of words a speaker is able to re-create a type of verbal environment for the listener which in turn conveys many of the qualities, movements and objects of the original experience. Through the use of adverbs, verbs, adjectives, and nouns constructed in meaningful sentences, information is communicated.

Commonly, words are conceived of as representing objects and events in the environment. They retain their ability to communicate as they bring to mind some quality or mental re-creation of those concrete objects or events within the listener. Thus a word can, by agreement within a given linguistic community, refer to a concrete

object. For example, the word "car" refers to the concrete object having four wheels, a motor, a metal covering or body, which carries passengers, and is often used as a mode of transportation. Commonly then, words are viewed as a vehicle for transfering a mental environment from one person to another.

Such a conception of verbal communication no doubt stimulated the study of the unreality of certain words among the blind by Cutsforth (1932). There are many words which carry information for a sighted individual but for the blind have no basis in sensory experience. For example, the color spectrum is imperceptible to the blind, thus, the words representing colors are rendered meaningless. The meaninglessness of any word is conceived of as stemming from the fact that it is incapable of communicating information which the individual is able to obtain through his sensory apparatus.

Just as color, an objective sensory based word, is meaningless to a blind individual, so are many abstract concepts meaningless to a sighted person simply because they are beyond his experience (Cutsforth, 1932).

Since the study of the unreality of words among the blind conducted by Cutsforth, there has been an increasing awareness of the concept of verbalism and its presence in blind children (Dokecki, 1966). Central to the concept of verbalism is the evidence that blind youngsters, as a part of their verbal behavior, use concrete words which, for them, bear little relationship to sensory experience (Cutsforth, 1932; Harley, 1963). The term verbalism refers to use of words for which there is no sensory counterpart.

The necessity of grounding all concrete words directly in sensory experience is questioned by Dokecki (1966). Using the theoretical frameworks of Osgood, Bousefield and Deese, he argues that much of the meaning in words is derived from their association with other words. Thus, meaning can be obtained for a given word through its association with other words and need not stem alone from its association with the object it represents. Dokecki (1966) argues further that for the blind also meaning can be attained for otherwise visual words via this word-word relationship.

In light of the questions raised by Dokecki (1966) it should prove interesting and fruitful to measure the meaningfulness of words contained in the verbalisms of blind children.

Relatively widespread educational implications should derive from such a consideration of the meaningfulness of verbalisms in the blind. If words for which there is no sensory counterpart have no meaning, then a teaching approach which places emphasis upon tactile, aural and other remaining sensory experiences is essential. Verbalism in the blind should be eliminated in favor of a meaningful, sensory based verbal communication.

Should the opposite be true, that is, should meaning derive from the context of a word within sentences or through its association with other words, then verbalism can have a vital role in the language of the blind. By retaining those words identified as verbalisms and by more carefully studying the meaning attached to various words, a wider more rich vocabulary and potential communication vehicle is available to the blind. The educational emphasis in language acquisition and use of language in instruction is critical to the kind and extent of meaning which resides in the verbalisms of blind children.

Purpose of Study

The primary function of the present study was to compare meanings acquired through word-thing associations with meanings acquired through associations of words with words. To do so, this study attempted to compare meanings for words which vary in concreteness and in visual connotations. Words were selected which fell into one of the following catagories; (1) words representing concrete objects not recognized or identified by a majority of the participating blind Ss, (2) words representing abstract concepts, and (3) words representing concrete objects having specific visual connotations or components.

Two types of comparisons were made. First, blind, partially seeing and normally sighted populations were compared for the meanings they assigned individual words. Secondly, the meanings assigned the words were compared for two groups of blind Ss which differed in their tendency toward verbalism.

Measurement of meanings for the various words or concepts was made possible by use of the semantic differential, an instrument first introduced by Osgood (1952). The semantic differential provides a method by which Ss can rate any number of words or concepts on a series of scales which have as their extreme end points adjective antonyms. By having Ss rate each of several words over several scales, e. g., good-bad, hot-cold, heavy-light, in which extreme, moderate, and neutral choices are available, a type of semantic profile of affective meaning emerges. Comparison of these affective meanings across groups differing in vision or in their tendency toward verbalism provides a comparison of the roles of language and sensory experience in the acquisition of meaning.

A further purpose of the present study was to compare groupings or clusters of adjective scales resulting from factor analysis. Such a comparison should reveal similarities and differences in mode of responding to the adjective scales of the semantic differential for groups differing in vision.

Limitations

The study reported herein is limited by the very fact that it deals with a minority population. Any use of a special group, particularly one as small as that of the severely visually impaired presents problems in sampling. First, there are relatively few severely visually impaired individuals in the general population. This requires a more difficult ferreting process when seeking Ss for study. Second, a more serious problem stems from the fact that many severely visually impaired children, by nature of their impairment, are involved in an unique educational environment, the residential school. The visually impaired Ss participating in the present study all come from a residential setting while their sighted counterparts, for the main, live at home and attend public day school classes.

This study is undertaken with the knowledge that the unique influence which life in a residential school may have upon the performance of these youngsters on the tasks used cannot be fully controlled.

A third limitation derives from a relative predominance of Ss having come from the high school grades. Because there are few totally blind youngsters in the elementary grades and because the present study reflected this in the sample, the majority of general conclusions will be most accurate for generalization to upper grade blind residential school youngsters.

Definition of Terms

Congenitally Blind.--Congenitally blind shall be defined, for the purposes of this study, as Ss who became blind before the age of one year.

Blind.--The term blind shall refer to Ss who have been diagnosed by a qualified physician as having no vision beyond the ability to perceive light.

Partially Seeing.--This term shall refer to those Ss who have been examined by a qualified physician and diagnosed as having a central visual acuity of not less than the ability to perceive movement of objects nor more than 20/200 in the better eye with maximum correction.

Normally Sighted.--For the purposes of this study, normally sighted Ss shall be defined as those having a central visual acuity in the better eye of 20/70 or better with or without correction and presently using no vision aids other than eye glasses.

Review of the Literature

The Concept of Verbalism in the Blind.--Cutsforth (1932) in his study of the unreality of words to the blind, collected associations to 40 words from 39 totally blind Ss ranging in grade level from four to 12. The Ss were instructed to respond with some quality of the word spoken by the E. The 1560 responses collected were analyzed separately for the adventitiously and the congenitally blind. The 13 adventitiously blind Ss gave responses of which 65 per cent named visual qualities while the congenitally blind Ss gave 48.2 per cent responses which named visual qualities. The highest percentage of

visual type responses were given to words which were often part of verbal jingles or were often associated verbally in a noun-adjective relationship such as, moon-light, green-grass, snow-white, and coal-black. Cutsforth also pointed out the lack of variety in the responses indicating use of senses such as hearing or touch. Few gave responses indicating varying qualities of these senses as would be shown by words such as chirp, twitter, cheep, warble or carol.

In a later publication Cutsforth (1951) comments on the unreality of words or verbalism in blind children and describes it as meaningless verbal terminology. Further, he expressed the concern that use of such meaningless verbiage will lead to poor cognitive organization in the blind individual since he is not organized with reference to his own experiential world.

Verbalism, as studied by Cutsforth (1932), was the predisposition of blind youngsters to give a relatively high percentage of words naming visual qualities as responses to stimuli in a word list. The concern over this apparent phenomenon was the preference by blind Ss for visual sensory based responses, when responses grounded in other senses operating in the blind were apparently just as available. Responses grounded in senses such as touch or hearing would appear to have much more meaning for a blind population.

Nolan (1960 attempted to replicate the experiment previously conducted by Cutsforth (1932). To test the possibility that Cutsforth's instructions biased his Ss toward responding with visual qualities, Nolan used a second group in which he altered the instructions so that the Ss were requested to respond with the first word that came

to mind. The results showed no statistically significant differences between the two treatment groups. The replication of Cutsforth's (1932) study failed to yield visual responses in nearly as great a quantity as did the original. This remarkable decline in the tendency for blind Ss to give visually oriented responses to stimulus words naming objects was attributed by Lowenfeld (1963) to an effort by educators to counteract this disposition through their teaching methods. He postulated that Cutsforth's (1932) experiment had drawn attention to verbalism to the extent that instruction in the schools placed greater emphasis upon sensory experiences and training. Verbalism would appear to be on the decline thanks to more recent teaching methods and increased emphasis on sensory training.

Harley (1963) took a more in depth look at verbalism in a study of 40 blind Ss selected from two residential schools for the blind. Verbalism was operationally defined in two different ways. First, visually oriented verbalisms were defined as the use of a word or words which refered to color or brightness when defining the name of an object. This is similar, though more restricted, to the verbalism investigated by Cutsforth (1932) and Nolan (1960). The second concept to undergo investigation by Harley (1963) in the same study was labeled verbalism and was defined as the inability of a child to identify by some sensory means the objects symbolized by the word when he was able to give an acceptable definition. Thus, the ability to define but not to identify was taken as the measure of verbalism and was given central place in his study.

To conduct his study, Harley (1963) selected 39 words from Gates' A Reading Vocabulary for the Primary Grades. The Ss were

selected for the study on the basis that they could correctly define all of the words in the list. A definition was credited as correct if the S gave a synonym, correct use, one or more correct attributes, a general class to which the word belonged, an example correctly using the word itself, or gave one or more correct descriptive features. Following the definition of all words, the Ss were given the objects or appropriate models signified by the words in the list and requested to identify them. Verbalism scores were determined for each S by subtracting the number of objects correctly identified from the number of words correctly defined. The difference was recorded as a verbalism score.

Results of the study gave support to Nolan's (1960) study that visually oriented responses do not occur often enough to warrent concern. The mean for visually oriented responses was 2.19 with a standard deviation of 1.70. However, verbalism, as operationally defined by Harley (1963), was clearly in evidence. The mean verbalism score for the group was 21.40 with a standard deviation of 6.62. The results also showed that verbalism was correlated significantly and negatively with age, experience and intelligence. An older, more intelligent or more experienced child would normally show less verbalism than a younger, less intelligent or inexperienced child. Interpretation of Harley's results indicate in the blind a lingering inability to identify many of the objects they can correctly describe verbally. Such words take common place in their verbal intercourse. There appears to be a continuing meaninglessness about much of the language of blind children. The apparent display of verbal finesse with

corresponding inability in sensory recognition of the objects signified, hints at some sort of cognitive void surrounded by a superficial verbal shell.

Dokecki (1966) reviews the literature on verbalism in light of recent thinking in the field of psycholinguistics. Such theorizing questions the need for grounding all verbal acquisition and interchange in sensory experience. The emphasis placed on verbalism by Cutsforth (1932), Nolan (1960), and Harley (1963) serves to tie the acquisition and interchange of words to sensory experience through a word-thing relationship. Dokecki (1966) stresses the word-word relationship acknowledged in current psycholinguistic literature. He points out that meaning is not necessarily absent because a word does not elicit a sensory based response. The culture and verbal environmental factors affecting learning are also stressed. In this light, Cutsforth's (1932) study may have elicited as responses many words which were given as associates primarily because they were learned in association with those particular stimulus words. The youngsters, in fact, learned the words in a word-word or verbal context. Support for this contention is obtained by the fact that the greatest percentage of visual responses were given for those stimulus items which were commonly a part of jingles.

Dokecki (1966) reveals what may be an extraneous factor affecting the results of Harley's (1963) study. Development of touch or tactile ability with age can be conceived as producing the same results. Thus, until more careful experiments dealing with development of tactile ability in children are conducted, the fact that inability

to identify the objects which the Ss were able to define may be a matter of poor tactile ability rather than any void in cognitive meaning. There may be an accurate concept of the object and the word may portray meaning to the Ss but poor sensory acuity may prevent the objects themselves from being identified. One might hypothesize that the concept of verbalism may not entail the extent of meaninglessness that was first supposed.

A Measure of Meaning.--Charles E. Osgood (1952) put forth a mediation hypothesis in an attempt to get at a behavioral interpretation of meaning. He carefully defined the object-sign relationship in the following way:

> . . . a pattern of stimulation which is not the object is a sign of the object if it evokes in an organism a mediating reaction, this (a) being some fractional part of the total behavior elicited by the object and (b) producing distinctive self-stimulation that mediates responses which would not occur without the previous association of nonobject and object patterns of stimulation. (Osgood, 1952, p. 204)

A sign, be it verbal or nonverbal, is meaningful to the degree that it elicits in the organism some small portion of the behavior normally elicited by the object itself. This relationship is illustrated in Figure 1.

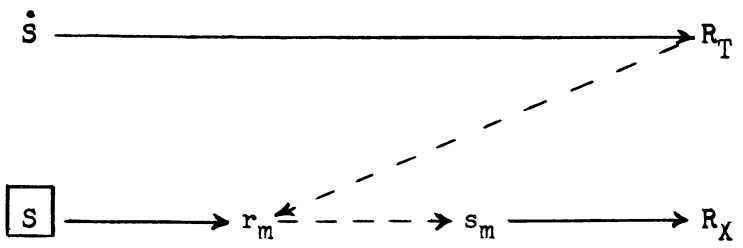

Figure 1.--Meaning Acquired Through Word-Thing Association (From Osgood, 1953, p. 697)

A sign, that is a word or symbol ($\boxed{S}$) which represents any object ($\dot{S}$), comes to elicit a portion (R_x) of the total response (R_T) normally elicited by the object itself. This occurs via a representational mediating response (r_m) which becomes the meaning of the sign and serves to produce self-stimulation which in turn mediates various instrumental responses (R_X).

Furthermore, a sign can acquire meaning through its association with other signs and need not be in direct association with the object itself. This is accomplished as portions of the meanings or representational behaviors for several signs transfer to a new sign and thereby become the meaning for the new sign. This process of acquiring meaning through word-word associations is illustrated in Figure 2.

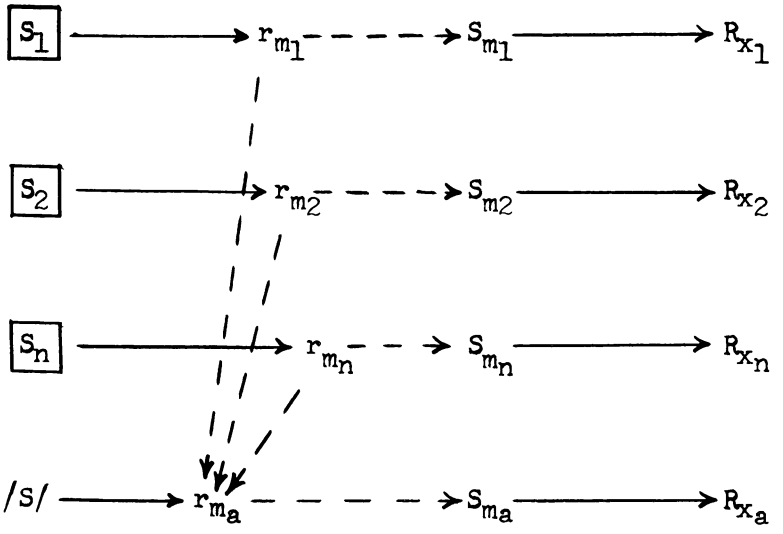

Figure 2.--Meaning Acquired Through Word-Word Association (From Osgood, 1953, p. 697)

To measure meaning in an individual, Osgood (1952) suggested the use of a semantic differential by use of which a concept can be

located in a hypothetical three-dimensional semantic space. Concepts such as book or apple could be rated on several bipolar scales whose end points are two opposing adjectives, e.g., good-bad. A sample page appears in Appendix C. The Ss can then rate any number of concepts on numerous adjectival scales, providing data by which the relative meaning of various concepts can be determined. Thus, two concepts very close in meaning should occupy similar positions in the semantic space.

The individual responses on each of the adjective scales for a particular concept would be an overt response associated with a representational mediating response (r_m) illustrated in Figures 1 and 2.

The three-dimensional characteristic of the semantic space hypothesized by Osgood (1952) bears resemblance to the data plot obtained from studies using the semantic differential conducted by Osgood, Suci and Tannenbaum (1957). In these studies analysis using a factor analytic technique revealed three primary factors labeled evaluation, potency and activity. Ratings of concepts by Ss on the semantic differential can provide information on both direction and intensity. A rating in the four position of Appendix C would be equivalent to a position on at least one of the primary axes in the semantic space.

Triandis and Osgood (1958) compared groups of 89 Greek and 43 American monolingual college students in a cross-cultural study in which both groups rated the same 20 concepts on 30 scales of the semantic differential. The results revealed the same primary factors of evaluation, potency and activity as shown in the previous work by

Osgood, Suci and Tannenbaum (1957). These three factors alone accounted for approximately 70 per cent of the total variance.

In summarizing a number of cross-cultural and within-culture studies, Osgood (1962) points to consistent evidence revealing the same three factors with evaluation accounting for the greatest variance and followed closely by potency then activity. Potency and activity are occasionally drawn together into a single factor labeled dynamism but their presence is always clearly evident. The three factors of evaluation, potency and activity usually account for all but 10 to 20 per cent of the total variance. Occasionally a fourth and rarely over five factors can be identified in the various studies reported.

In a cross-cultural study of Japanese and American college students involving semantic differential ratings of abstract words, colors and line drawings, Tanaka, Oyama and Osgood (1963) report findings of the same three major factors; evaluation, potency and activity. Very strong similarities existed between the two groups in their ratings of the various concepts. The different type of concepts, e. g., color, abstract word and line drawing, did alter the relative position of the three factors such that evaluation did not always account for the greatest amount of total variance.

Tanaka and Osgood (1965) followed with another study comparing cross-cultural semantic differential ratings of 24 perceptual signs judged over two scales. Subjects for the study were 47 American, 50 Finnish and 53 Japanese college students, all of whom were monolinguals born and raised in their home country. Stimulus objects for the study

consisted of four colors, four line forms and 16 color/form combinations produced by combining each color with each form. Again evaluation, potency and activity factors accounted for the greatest amount of variance. Potency and activity were couched in a dynamism factor as was true in previous studies; Osgood (1962).

Osgood (1962) goes further in his description of data derived from semantic differential ratings to consider different ways of usefully analyzing the data. There are essentially three elements which enter into an analysis of the data, namely, subjects, scales and concepts. Analysis can proceed in any or all of three ways; subjects by scales, subjects by concepts or scales by concepts. Subjects by scales analysis produce the notable three factors. Analysis in a subjects by concepts design is affective in obtaining subtle cross-cultural differences between groups as shown in the study by Triandis and Osgood (1958). The third possible analysis reveals a concept-scale interaction effect. Osgood (1962) attempts to explain such an interaction by separating the two aspects of meaning he calls denotative and connotative. Connotative meaning is described as affectively related and involves attitudes and feelings whereas denotative meaning is more akin to perceptual characteristics. Just so, jazz may be connotatively <u>hot</u> while lava would be denotatively <u>hot</u>. What Osgood (1962) calls denotative contamination may pull some items out of their normal factor loadings to reveal a concept-scale interaction. A second possible element causing interaction is what Osgood postulated as factorial coalescence. In such a situation some concepts tend to shift the ratings on the adjective scales toward a

given factor. For example the concept mother may rotate the scales toward an evaluative factor while the concept athletes may cause a rotation toward potency so that in the latter case good-bad no longer correlates with kind-cruel, but rather with strong-weak.

Bondly (1962) in a study of 102 college Ss who rated two abstract and two concrete concepts on a 20 scale semantic differential found that for the concrete concepts the scales shifted when the adjectives were directly applicable to properties of the concept. While the abstract concepts showed normal factoral composition on a concept-scale analysis, the concrete concepts yielded results very similar to those anticipated by Osgood's (1962) explanation of denotative contamination.

Darnell (1966) points up the need to restrict the interpretation of factor analysis to the specific concepts used in the study because of the concept-scale interaction. Reasons for this interaction are posited as resulting from pooled data over several concepts, the reversal of polarity in scales between concepts, and the change in relative meaning for the scales from concept to concept. Across a single concept the semantic differential is held to be a valid instrument. Since the interaction between concepts and scales is viewed as resulting from among concepts variability, a concept by concept factorial analysis should result in rather stable factors.

As with much of the research in verbal learning, the studies cited thus far have been conducted using primarily college students. One of the earliest comprehensive studies using the semantic differential with children was done by Donahoe (1961). He conducted his study using 200 Ss with 50 Ss coming from each of the first, third,

sixth and high school grade levels. Ten words and 10 line drawings representing objects named by the words were used as stimuli. Two alterations were made in the administration of the semantic differential. First the scales were reduced from seven to five points based on evidence from a pilot study indicating that children cannot reliably discriminate on a seven point scale. A second alteration was to administer the scale orally to the first grade Ss. The E would ask if the sign was adequately described by either scale end point or neither. If neither, the E would continue to the next item. If the S indicated one of the adjectives, he was asked to tell whether it was just the adjective or if it was very good, bad, etc.

The results indicated that while there was greater variability in the younger Ss, the factors of evaluation, potency and activity were found. Evaluation established itself at age nine while potency was not clearly established until age 12. While activity was present, it continued to be quite variable throughout the ages sampled.

Maltz (1963) also focused attention on developmental changes in his study of meanings measured by the semantic differential. The Ss used for the study were groups of 17, 25, 26, and 23 students attending the second, fourth, sixth and college grade levels respectively in a single locality. All Ss were requested to respond in writing on a five point scale and judged seven concepts on nine scales.

Evaluation and analysis of the data were focused on changes in concepts over age. Changes in concepts over age were shown. Further, there was greater variability in the meaning of concepts among the youngest children. These results strongly support those found by Donahoe (1961).

Results of a normative study by DiVesta (1966) using Ss in grades two through seven to rate 220 concepts on 21 to 37 scales supported the previous results of Donahoe (1961) and Maltz (1963) by showing that shifts in meaning over age are consistent and gradual. Also, evaluation, potency and activity emerged as factors at each grade level.

Analysis of the scale mode in a developmental study by Lilly (1966) revealed the same three factors as accounting for the majority of the variance. Concepts became more common in meaning with an increase in age.

For use with a group of retarded adolescents, Rybolt (1968) reduced the scale to five points and administered the semantic differential orally. The results obtained from five concepts judged by 79 Ss on 25 scales bore strong resemblance to those done with normal children and adults.

Verbalism as a phenomena is established by the literature and its correlates are relatively well understood. Its effect upon thinking processes of blind youngsters is less well understood. An investigation of meaning in relation to verbalism provides a second step in discovering what, if any, significant educational implications are involved in verbalism behavior.

The semantic differential as a reliable instrument of measuring affective meaning has received considerable substantiation in the literature. Its usefulness has been demonstrated with both children and adults, and with both normal and abnormal groups of individuals. Its use in the study which follows provides an extension of its

use to another special population and also becomes a valuable instrument in extending our understanding of verbalism.

Statement of Hypotheses

Hypothesis I.--Degree of vision will result in differences in affective meanings ascribed to concrete concepts and to abstract concepts which have visual connotations.

If confirmed, this hypothesis would support the position that words derive considerable meaning from their association with the objects, events or qualities they represent. Further this meaning is unique from any meaning obtained through the association of the words with other words in the language. This is in line with the position taken by Cutsforth (1932).

If there are no between groups differences in affective meaning for concepts which vary in their abstractness or visual connotations when those groups differ in vision, then words must derive considerable meaning from word-word associations. Such results would provide evidence supporting the kind of reasoning posed by Dokecki (1966).

Hypothesis II.--Blind school aged Ss identified as high verbalizers will ascribe different affective meanings to a given list of concepts than will low verbalizers.

This hypothesis, if supported, would provide further evidence for the role of word-thing associations in the acquisition of meaning in words. Should high and low verbalizers attach different meanings to concrete concepts or words having visual connotations there would be clear implication that the ability to identify or recognize objects tactually plays a definite role in the

acquisition of meaning. If words have different meanings for blind Ss who vary in their ability to identify objects, the role of word-thing associations in language is supported. However, should this hypothesis fail to be supported, the evidence would tend to favor a position emphasizing word-word associations in the acquisition of meaning.

Should meanings for words representing concrete objects or concepts having visual connotations remain uneffected by the ability to perceive and recognize objects such meanings must come from within the language itself through word-word associations.

Hypothesis III.--For blind school aged Ss, verbalism will vary inversely with age, grade and I. Q.

This hypothesis proposes a relationship between verbalism and each of the characteristics of age, grade and I. Q. These data provide a means of direct comparison with results of a previous investigation of verbalism conducted by Harley (1963). The present study provides the additional opportunity of assessing the relative correlations of age and grade with verbalism.

CHAPTER II

METHODOLOGY

Rationale

The study reported herein is designed to assess the degree of meaningfulness in verbalisms of blind school aged children. To do so it seeks to compare connotative meanings ascribed to abstract concepts by blind Ss identified as high and low verbalizers and by blind, partially seeing and normally sighted Ss.

Subjects

A total of 143 blind, partially seeing and normally sighted Ss participated in the present study.

Group A consisted of 41 congenitally blind Ss in grades one through 12. All Ss were attending a single residential school for the blind. Chronological ages ranged from 6 yrs. 5 mos. to 19 yrs. 2 mos.

Group B consisted of 41 partially seeing Ss attending the same residential school as the Ss for Group A. When possible, these Ss were equated for grade and/or age, and/or sex, and/or I. Q. with Ss in Group A. Chronological ages for Group B ranged from 8 yrs. 6 mos. to 19 yrs. 7 mos.

Group C consisted of 61 normally sighted Ss attending regular public school classes. Of these, 14 Ss were attending a rural school while the remaining Ss were selected from an elementary, a junior high and a senior high school in an urban setting.

Each S in Group C was matched on age, grade, sex and I. Q. with a S from either Group A or Group B such that every S in Groups A and B had at least one normally sighted matched counterpart.

With but few exceptions, every S was matched so that age was within six months, grade was the same, sex was the same, and I. Q. was within 10 points. The characteristics for the Ss in each group are summarized in Table 1. For a list of individual Ss refer to Appendix A.

TABLE 1

CHARACTERISTICS OF PARTICIPATING SUBJECTS

	Age		Grade		Sex		I. Q.	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	M	F	$\bar{X}$	S.D.
Blind	14-6	3-0	8.2	3.1	23	18	104.7	12.2
Partially Seeing	15-1	2-9	8.7	2.9	20	21	99.2	12.2
Normally Sighted	14-4	3-2	8.4	3.2	33	28	103.7	11.6

Since intelligence tests had not been administered to all Ss in lower elementary grades and because of the age of some secondary level blind Ss, matches within the prescribed criteria were not possible for all four characteristics in every case.

Materials

In order to obtain verbalism scores, a collection of 39 objects and a vocabulary list consisting of the names of those

objects were adapted from Harley (1963). The vocabulary list appears in Appendix B 1. The vocabulary list was used to obtain a measure of the Ss' ability to correctly define words representing common objects. Objects representing the items in the vocabulary list were used to obtain a measure of the ability to identify. The actual objects were used whenever possible with models or toys being substituted when size or practicality dictated. A full description of the objects is contained in Appendix B 2. A verbalism score was obtained by subtracting the number of objects correctly identified from the number of words correctly defined.

For the purpose of obtaining a measure of meaning, a five point semantic differential scale consisting of 15 words representing concepts, each judged on 15 adjective pairs, was used. Sample pages of the semantic differential appear in Appendix C.

Four items were abstract concepts which had been reported in the literature, four were selected subsequent to obtaining verbalism scores from blind Ss and the remaining items were selected as concepts having visual or multisensory components. The concepts and the scales on which they were rated are listed in Tables 2 and 3.

Procedure

All Ss were first administered the 39 items of the vocabulary list individually using procedures adapted from Harley (1963). Each S was instructed as follows: "I have a list of words. I want to see which of these words you know. Listen carefully and tell me what these words mean. Bonnet . . . what is a bonnet?" If the E felt an answer could not be readily scored or was vague, he would say,

TABLE 2

LIST OF CONCEPTS RATED ON THE SEMANTIC DIFFERENTIAL

Abstract Concepts	Concrete Objects Yielding High Verbalism Scores	Concepts with Visual or Multisensory Components
America	Bonnet	City
Fear	Plow	Clouds
Friend	Rice	Fire
God	Squirrel	Hippie
		Riot
		Slum
		Soldier

TABLE 3

LIST OF ADJECTIVE SCALES USED TO RATE CONCEPTS ON THE SEMANTIC DIFFERENTIAL

Evaluation	Potency	Activity
good - bad	hard - soft	hot - cold
kind - cruel	heavy - light	fast - slow
happy - sad	strong - weak	active - not active
sweet - bitter	large - small	excitable - calm
pretty - ugly	long - short	sharp - dull

"Please explain a little more" or "What else does bonnet mean". If S appeared to be responding to a homonym, the E said, "Listen carefully to what I say and tell me about it . . . bonnet; what is a bonnet?" The E would substitute the appropriate word in the place of bonnet.

Any recognized meaning was credited if applicable. Specifically, the following were credited as correct responses.

1. A synonym
2. A use
3. One or more correct attributes
4. A general classification to which the word belonged
5. An example which correctly used the word itself
6. One or more correct descriptive features

Two individuals scored the responses. Only those responses judged as correct by both individuals were accepted.

Following the administration of the vocabulary list, each S was asked to identify the 39 objects represented by the words in the list. The objects were placed on tables and were then handed to the S one at a time for him to identify. To give each S an equivalent opportunity to identify the item, a maximum of 15 secs. was given for each item.

The following directions, adapted from Harley (1963), were given each S. "I am going to show you some objects. Some are models, toys or stuffed animals. The others are as you would find them about you every day. You are to examine each one carefully. As soon as you know what it is or what it represents, say the name of the object. Do you understand?"

After any questions were answered, the objects were handed to the S one at a time. As he handed the object to the S, the E would say, "What does this represent?" or "What is this?" If the response was vague, the E would follow with "Can you tell me anything more about it?"

Each response was recorded verbatim. Credit was given for responding with the name of the object as given in the vocabulary list. Correct classification was not credited. For example, a response of "fruit" for orange or "cloth" for velvet was scored as incorrect. When the response had the same meaning as the item listed on the test, the item was scored as correct. For example, if the S responded by saying "baby chicken" for chick, he was given credit.

Two individuals scored the responses. Again, only those responses scored correct by both judges were accepted.

The final stage of the experiment consisted of the administration of a semantic differential to all Ss. The procedure was adapted from Rybolt (1968).

Subjects in grades one through four were administered the scales orally and individually. For Ss in grades five through 12, most administration was conducted in groups. Only those Ss who could read all the words appearing on the semantic differential were administered it in the group. The following instructions were used.

The E read the following for the individually administered procedure. "I am trying to find out what some words mean to different people. The way I do this is to tell you the word, then give you a choice of two possible meanings and ask which meaning fits the word

best. For example, I might give you the word baby and then ask if heavy or light fits baby best. What would you say? (Pause). All right, would you say baby is a little light or very light?" (Heavy would have been substituted for light had any S given this response.) "Sometimes you may think that neither meaning fits the word best. If so you may say 'neither'. Are there any questions?"

The E's instructions for the grouped procedure were as follows: "I am trying to find out what some words mean to different people. The way I do this is to tell you the word, then give you a choice of two possible meanings and ask which meaning fits the word best. For example, I might give you the word baby and then ask if heavy or light fits baby best. What would you say? In the first sample mark your choice on the line immediately above the word you think best fits baby.

"Now look at sample two. Would you say baby is a little light or heavy or very light or heavy? Make a mark on the line immediately above your choice.

"Now look at sample three. Sometimes you may think that neither meaning fits the word best. In that case you may mark the center box labeled neither." The Ss were then instructed to turn to the next page. "At the top of this page you will find the word devil. On the first line you will find the choices of very kind, kind, neither kind nor cruel, cruel, and very cruel. Mark the line immediately above your choice. Go to the next line and mark your choice. (Pause). Continue with the rest of the meanings on this page by marking the one choice on each line which you think best fits the word devil."

After reading the list of adjective pairs and having the Ss mark their selection for each of the 15 items, the E asked for questions and then instructed the Ss to begin.

For use with Ss who normally read braille, the semantic differential was altered. An example appears in Appendix C 4. The directions by the E were kept nearly the same as those for Ss reading print. Directions were altered for each group only where specific reference was made to the mode or position of the response. The general instructions were held constant for all Ss with the exception that one additional example was given to Ss administered the semantic differential in a group situation.

Instructions for Ss administered the semantic differential in braille were as follows.

"I am trying to find out what some words mean to different people. The way I do this is to tell you the word, then give you a choice of two possible meanings and ask which meaning fits the word best. For example, I might give you the word baby and then ask if heavy or light fits baby best. What would you say? In the first sample mark your choice on the dash which immediately follows the word you think best fits baby.

"Now look at sample two. Would you say baby is a little light or heavy or very light or heavy? Make a mark on the dash immediately following your choice.

"Now look at sample three. This time the two possible meanings, heavy and light, are listed on the left of the page. To their right are four choices, each followed by a dash. Each choice is

marked only by its first letter, v h for very heavy, h for heavy, l for light, and v l for very light. Sometimes you may think that neither meaning fits the word best. In that case you may place a mark after the center choice marked n for neither."

The Ss were then instructed to turn to the next page. "At the top of this page you will find the word devil. To the left of the first line you will find the words kind and cruel. To the right of these words are five choices marked by the first letter of the words; v k for very kind, k for kind, n for neither kind nor cruel, c for cruel and v c for very cruel. Place a mark on the dash immediately following the first letter of the meaning you think best fits devil. Go to the next line, read the two words, then mark your choice from the five possible. Continue with the rest of the meanings on this page by marking the one choice on each line which you think best fits the word devil."

When all Ss had been checked to see that they were responding to one item for each adjective scale and questions had been answered, the E instructed the Ss to turn to the next item and begin.

CHAPTER III

RESULTS

Method of Analysis

Results of the statistical analysis of the data are reported separately for each of the three major hypotheses. Since the major hypotheses themselves differ in the basic questions asked and measurements made, statistical tools required for each analysis also differ. The statistical measure used is reported with the results for an individual hypothesis.

To increase information for the reader the actual level of significance is reported for each test result. A research hypothesis is accepted as being supported if the statistical test results give a significance level of .05 or less.

For analyses of semantic differential data, the dependent variable consists of the numerical value, ranging from one to five, which is assigned to a S's rating on each adjective scale for individual concepts. The values were assigned so that a response by a S in the extreme position for the adjectives active, excitable, fast, good, happy, hard, heavy, hot, kind, large, long, pretty, sharp, strong, and sweet each received a value of one. A mark in the moderate position for any of the above adjectives was assigned a value of two. A neutral response in the central position, indicating a choice for neither adjective of a pair, was assigned a value of

three. A value of four was assigned to responses in the moderate position and a value of five to responses in the extreme position for the adjectives bad, bitter, calm, cold, cruel, dull, light, not active, sad, short, slow, small, soft, ugly, and weak. These assigned values were used as the dependent variable for all factor analyses.

Subsequent to determining the factor loadings and their component adjective scales, summed scores were used for the analysis of variance. To reduce the variance involved, a 3 x 15 x 15 analysis of variance design was converted to a 3 x 3 x 15 design by summing the assigned values for the dependent variables within each of the three scale factors. The dependent variable thus became the sum of assigned values for the five scales composing a particular scale factor. Since five scales loaded on each factor the value for the dependent variable could range from five to 25 with a neutral response represented by a summed value of 15.

In the factor analysis investigations, the rotations were continued until a given rotation could no longer produce at least two elements in the additional factor. Only those factors were accepted and interpreted which accounted for at least 10 per cent or more of the total variance.

Analysis of Hypothesis I

To determine group differences in responses to abstract and concrete concepts varying in their visual components, three separate statistical procedures were used. Factor analysis of scales was conducted to determine specific factor clusters appropriate as a

test for main effect in subsequent analysis of variance. For more direct comparison of the three groups, an analysis of variance was calculated in which vision, factors, and concepts were the main effects studied. To further examine any differences between groups, a factor analysis of concepts was run for each of the vision groups. Concept clusters should provide supportive evidence for the results obtained from an analysis of variance.

Results of the factor analysis indicated three major factor clusters for each of the three groups. Five scales loaded heaviest on each of the three factors which were labeled evaluation, potency and activity. Results are shown in Tables 4 - 6.

Since three factors were relatively consistant across the three groups and since they loaded on the same scales for each group, they were used as a main effect in the subsequent analysis of variance. Using these three factors, vision and concepts as main effects, a 3 x 3 x 15 analysis of variance was calculated. Results are summarized in Table 7.

Analysis of between groups differences failed to reach significance. The main effects for factors and for concepts each reached significance. Also the three interaction effects resulting from concepts interacting with factors, from concepts interacting with groups and from concepts interacting with factors and groups together each reached significance beyond the .05 level. These results indicate possible support of Hypothesis I through the significant interaction effects between concepts and groups. Support is not clearly evident without first graphing the relationship.

TABLE 4

FACTOR LOADINGS OF 15 SCALES FOR BLIND SAMPLE
2ND VARIMAX ROTATION

Scales	Factor I	Factor II	Factor III
good - bad	0.84	0.04	-0.02
kind - cruel	0.77	0.06	-0.01
happy - sad	0.76	-0.03	0.02
sweet - bitter	0.80	-0.03	-0.10
pretty - ugly	0.79	-0.08	0.08
hard - soft	-0.40	0.45	0.15
heavy - light	-0.13	0.70	0.06
strong - weak	0.24	0.49	0.42
large - small	0.04	0.75	0.07
long - short	0.04	0.66	0.05
hot - cold	-0.07	-0.09	0.61
fast - slow	0.09	0.16	0.59
active - not active	-0.03	0.11	0.65
excitable - calm	-0.24	0.08	0.44
sharp - dull	0.07	0.08	0.62

[a]Proportions of total variance accounted for by each factor: 2nd Rotation, Factor I = 0.23, II = 0.13, III = 0.13

TABLE 5

FACTOR LOADINGS OF 15 SCALES FOR PARTIALLY SEEING SAMPLE
2ND VARIMAX ROTATION

Scales	Factor I	Factor II	Factor III
good - bad	0.82	-0.02	0.05
kind - cruel	0.83	-0.04	0.02
happy - sad	0.80	-0.04	0.06
sweet - bitter	0.72	-0.14	-0.04
pretty - ugly	0.75	-0.10	0.09
hard - soft	-0.28	0.64	-0.06
heavy - light	-0.11	0.72	-0.01
strong - weak	0.11	0.59	0.42
large - small	-0.08	0.66	0.11
long - short	-0.00	0.54	0.04
hot - cold	0.05	-0.08	0.37
fast - slow	0.11	0.10	0.70
active - not active	0.04	0.22	0.58
excitable - calm	-0.30	-0.04	0.64
sharp - dull	0.23	0.33	0.49

[a]Proportions of total variance accounted for by each factor: 2nd Rotation, Factor I = 0.22, II = 0.15, III = 0.12

TABLE 6

FACTOR LOADINGS OF 15 SCALES FOR NORMALLY SIGHTED SAMPLE
2ND VARIMAX ROTATION

Scales	Factor I	Factor II	Factor III
good - bad	0.85	-0.00	-0.00
kind - cruel	0.85	-0.00	-0.03
happy - sad	0.81	-0.03	0.05
sweet - bitter	0.80	-0.08	0.04
pretty - ugly	0.79	-0.19	0.03
hard - soft	-0.41	0.56	0.01
heavy - light	-0.20	0.73	0.06
strong - weak	0.23	0.54	0.39
large - small	-0.03	0.75	0.05
long - short	0.04	0.67	0.02
hot - cold	-0.00	-0.06	0.45
fast - slow	0.04	0.04	0.75
active - not active	0.20	0.24	0.62
excitable - calm	-0.17	0.08	0.65
sharp - dull	0.41	0.18	0.38

[a]Proportions of total variance accounted for by each factor: 2nd Rotation, Factor I = 0.26, II = 0.15, III = 0.12

TABLE 7

ANALYSIS OF VARIANCE OF SEMANTIC DIFFERENTIAL PERFORMANCE FOR BLIND, PARTIALLY SEEING AND NORMALLY SIGHTED

Source	SS	df.	MS	F
Between Groups	87.892	2	43.95	1.2
Between Factors	2096.615	2	1048.31	54.1**
Between Concepts	19166.022	14	1369.00	122.2**
Subjects Within Groups	5182.003	140	37.01	
Factors x Concepts	37335.320	28	1333.40	136.6**
Groups x Factors	47.783	4	11.94	.6
Concepts x Groups	558.405	28	19.94	1.8*
Factors x Subjects Within Groups	5420.847	280	19.36	
Concepts x Subjects Within Groups	21959.484	1960	11.20	
Concepts x Factors x Groups	1189.258	56	21.24	2.2**
Factors x Concepts x Subjects Within Groups	38265.511	3920	9.76	
Total	131309.140	6434	20.41	

*Significance at .05 level
**Significance at .01 level

graphs of the scores of the 15 concepts for each group appear in Figures 3 and 4. Careful analysis of the individual concept scores for each group reveals that the major portion of interaction effect is contributed by the concepts, hippie, plow and rice with some small portion being contributed by fear, fire, soldier and slum.

As revealed by the profile of concept scores in Figure 4, greatest distance between groups existed for the concepts city, friend and squirrel with the greatest similarity occuring for fear, riot and soldier.

While some concepts interacted differentially with groups to produce a significant effect, the concepts did not differ enough between groups to support Hypothesis I.

To assist in the analysis and to marshal supportive evidence for the results of the analysis of variance, determination of how the concepts tended to cluster for each group was made via factor analysis. Mean scores are listed in Appendix D.

Results of the factor analysis indicate three major clusters for the blind and partially seeing groups with a fourth cluster reaching an acceptable level for the sighted group. As shown in Tables 8 - 10, the factors and the concepts which make them up are nearly identical for all three groups. There is remarkable similarity in the way the three groups ascribe affective meanings to the concepts. Of the three major factors which emerge for the concepts, Factor I appears to represent a positive affective cluster, Factor II a negative affective cluster, and Factor III an object-concrete cluster. A fourth factor reaching an acceptable level only for the

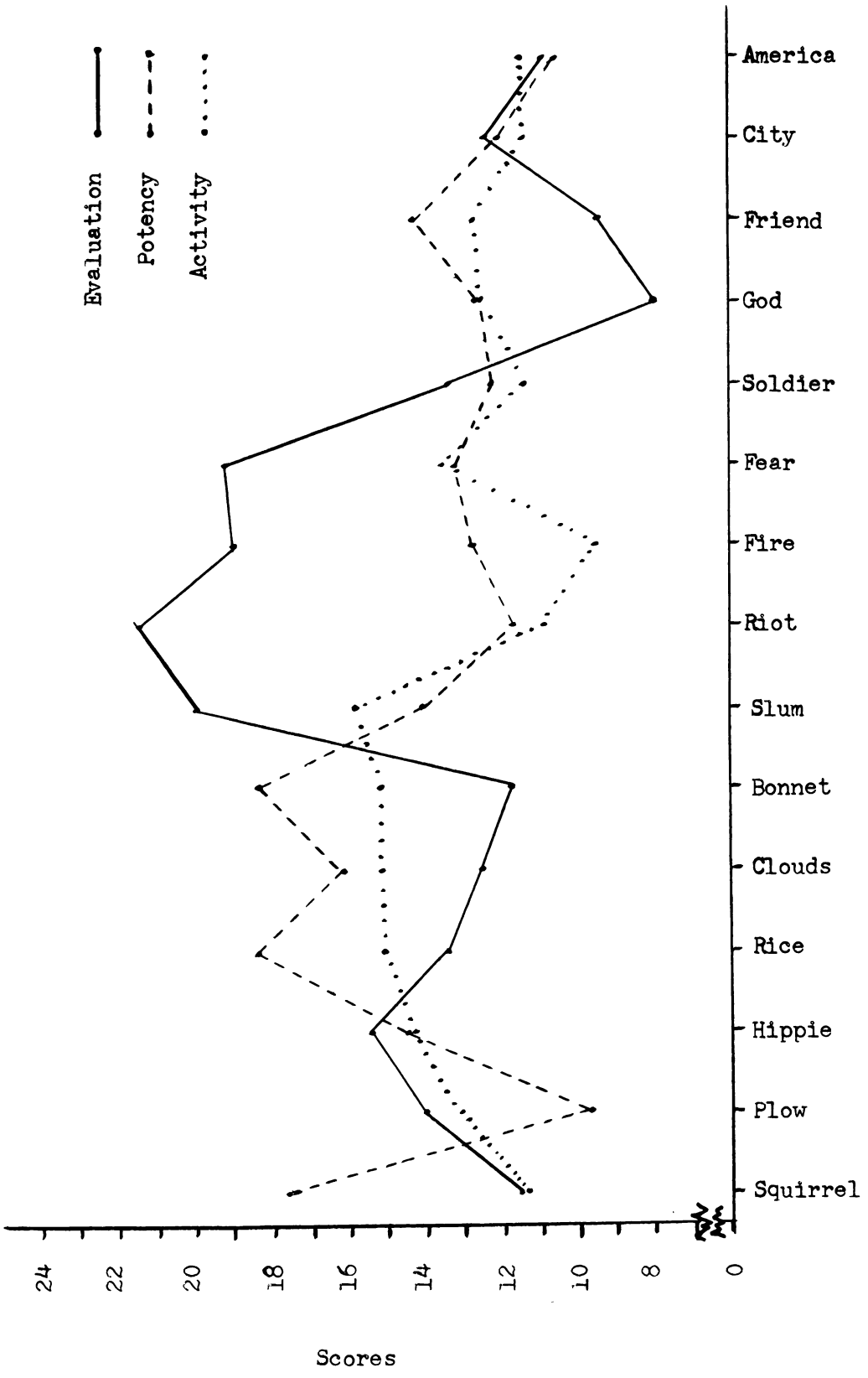

Figure 3.--Mean Concept Scores for Scale Factors for Blind, Partially Seeing, and Normally Sighted

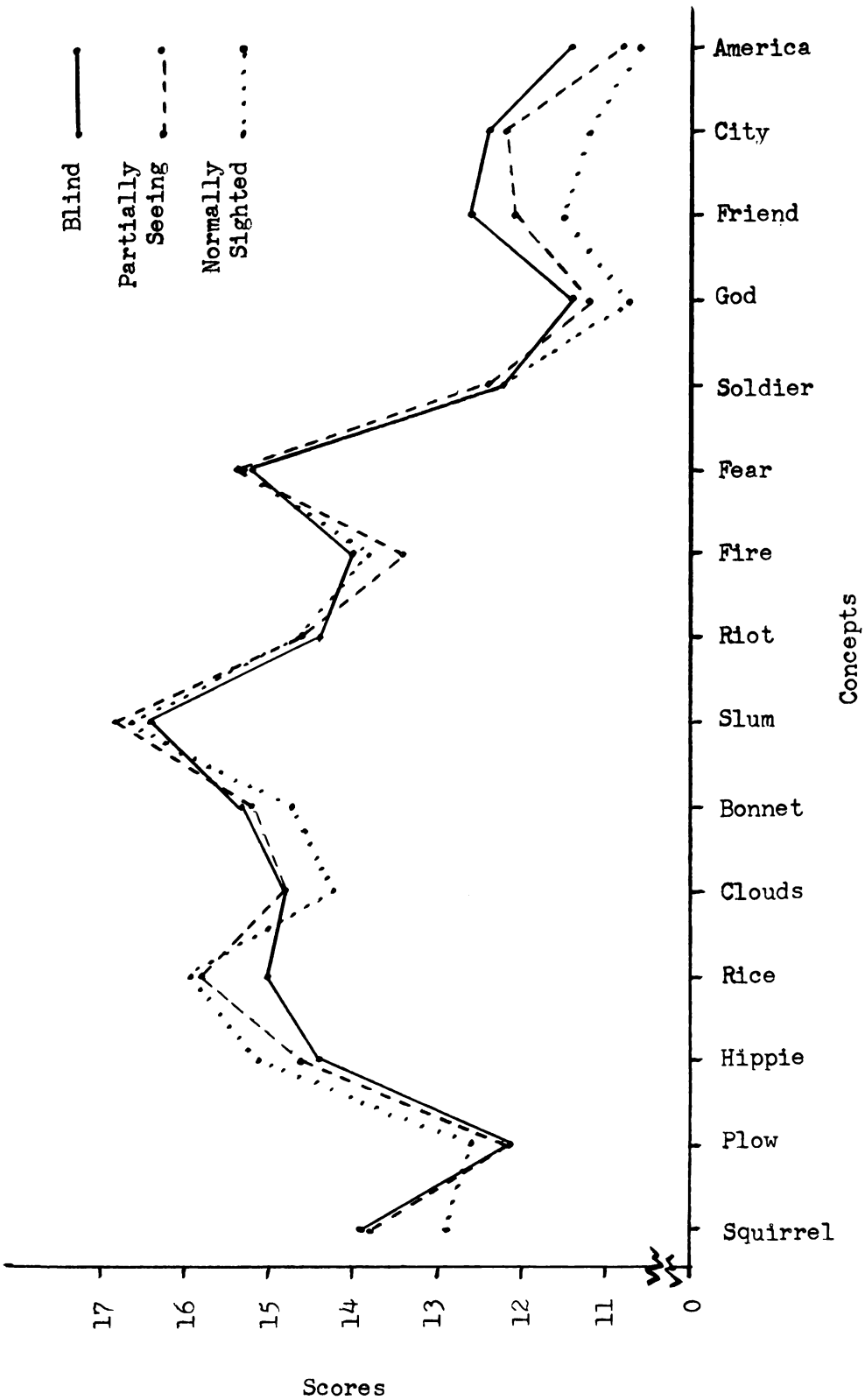

Figure 4.--Mean Concept Scores for Blind, Partially Seeing, and Normally Sighted

TABLE 8

FACTOR LOADINGS OF 15 CONCEPTS FOR BLIND SAMPLE
2ND VARIMAX ROTATION

Concepts	Factor I	Factor II	Factor III
America	0.57	0.11	-0.17
Bonnet	0.11	-0.22	-0.66
City	0.52	0.23	-0.28
Clouds	0.23	0.14	-0.55
Fear	0.02	0.64	0.06
Fire	0.06	0.66	0.06
Friend	0.54	-0.36	-0.17
Hippie	0.28	0.10	0.30
God	0.62	-0.34	-0.17
Plow	0.43	0.18	0.19
Rice	-0.10	-0.16	-0.65
Riot	0.10	0.72	0.18
Slum	0.03	0.60	-0.02
Soldier	0.67	0.08	-0.02
Squirrel	0.20	-0.04	-0.58

[a]Proportions of total variance accounted for by each factor: 2nd Rotation, Factor I = 0.14, II = 0.14, III = 0.12

TABLE 9

FACTOR LOADINGS OF 15 CONCEPTS FOR PARTIALLY SEEING SAMPLE
2ND VARIMAX ROTATION

Concepts	Factor I	Factor II	Factor III
America	0.63	-0.02	0.13
Bonnet	-0.02	0.16	0.67
City	0.58	-0.20	0.08
Clouds	0.19	-0.19	0.44
Fear	0.09	-0.72	-0.07
Fire	0.21	-0.61	-0.00
Friend	0.48	0.48	0.12
Hippie	-0.04	-0.14	0.03
God	0.55	0.41	0.22
Plow	0.24	-0.10	-0.49
Rice	0.04	0.25	0.39
Riot	0.15	-0.70	-0.30
Slum	-0.00	-0.48	-0.39
Soldier	0.64	-0.09	-0.27
Squirrel	0.28	-0.03	0.63

[a]Proportions of total variance accounted for by each factor: 2nd Rotation, Factor I = 0.13, II = 0.15, III = 0.12

TABLE 10

FACTOR LOADINGS OF 15 CONCEPTS FOR NORMALLY SIGHTED SAMPLE
3RD VARIMAX ROTATION

Concepts	Factor I	II	III	IV
America	0.54	-0.10	0.04	0.36
Bonnet	0.14	0.30	0.59	-0.31
City	0.66	-0.25	0.02	-0.13
Clouds	0.23	0.21	0.58	-0.03
Fear	0.09	-0.64	-0.11	0.23
Fire	0.05	-0.74	-0.05	-0.13
Friend	0.59	0.26	0.34	-0.16
Hippie	-0.21	-0.41	0.30	0.30
God	0.57	0.34	0.34	0.04
Plow	0.17	-0.10	-0.06	0.73
Rice	-0.08	0.03	0.75	-0.01
Riot	0.08	-0.74	-0.30	0.06
Slum	0.01	-0.53	-0.12	0.44
Soldier	0.69	-0.10	-0.08	0.08
Squirrel	0.27	-0.04	0.46	-0.52

[a]Proportions of total variance accounted for by each factor: 3rd Rotation, Factor I = 0.14, II = 0.16, III = 0.13, IV = 0.10

normally sighted group is not clearly definable. Also of significance is the fact that these clusters of concepts do not coincide with the original rationale used in their selection for any of the three groups. This is particularly noteworthy for the blind group where an effect resulting from the visual components of the concepts would be expected to influence the meanings given to them.

Analysis of Hypothesis II

Prior to directly comparing responses on a semantic differential for blind Ss identified as high and low verbalizers, the responses were subjected to factor analysis.

As shown in Table 4, the adjective scales tended to group into three main factors which were labeled evaluation, potency and activity. Five scales loaded heaviest on each of the three factors. Since three factors were identified by factor analysis, they were incorporated into subsequent analyses.

To control for the fact that grade level and I. Q. correlate with verbalism, the blind Ss were divided at the mean into high and low verbalism groups for each grade level. Because of the high positive correlation between age, grade and I. Q., the procedure of dividing into high and low verbalism groups at each grade level served to minimize their cumulative effect upon subsequent analyses. Subjects scoring above the mean for their grade level were identified as high verbalizers while those scoring at or below the mean were identified as low verbalizers.

Blind Ss identified as high and low verbalizers were compared on their semantic differential performances by use of a three-way analysis of variance. The results are shown in Table 11.

TABLE 11

ANALYSIS OF VARIANCE OF SEMANTIC DIFFERENTIAL DATA FOR BLIND HIGH AND LOW VERBALIZERS

Source	SS	df.	MS	F
Between Groups	50.133	1	50.13	1.0
Between Factors	410.130	2	205.06	8.0**
Between Concepts	4334.223	14	309.59	31.4**
Subjects Within Groups	1835.799	38	48.31	
Factors x Concepts	7809.020	28	278.93	27.8**
Groups x Factors	2.683	2	1.34	.1
Concepts x Groups	66.147	14	4.72	.5
Factors x Subjects Within Groups	1955.632	76	25.73	
Concepts x Subjects Within Groups	5249.541	532	9.87	
Concepts x Factors x Groups	339.385	28	12.12	1.2
Factors x Concepts x Subjects Within Groups	10688.908	1064	10.04	
Total	32742.510	1799	18.20	

**Significant at .01 level

Analysis of between groups differences did not reach significance. The main effects of factors and concepts each reached significance. Only the single interaction effect of factors by concepts reached significance. These results failed to support Hypothesis II.

Analysis of Hypothesis III

To answer the question concerning the correlation between verbalism and each of the characteristics of age, grade and I. Q., a Spearman Rank-Order Correlation was computed for each of several characteristics. Resulting correlations are shown in Table 12. Graphs of the relationships between verbalism and each of the characteristics of age, grade and I. Q. are illustrated in Figures 5 - 7. The results demonstrate partial confirmation of Hypothesis III.

TABLE 12

SPEARMAN RANK-ORDER CORRELATION COEFICIENTS FOR BLIND SAMPLE

	Age	Grade	Vocabulary	Verbalism
Grade	.89**			
Vocabulary	.32*	.41**		
Verbalism	-.21	-.26*	-.03	
I. Q.	.22	.44**	.58**	-.31*

*Significant at .05 level
**Significant at .01 level

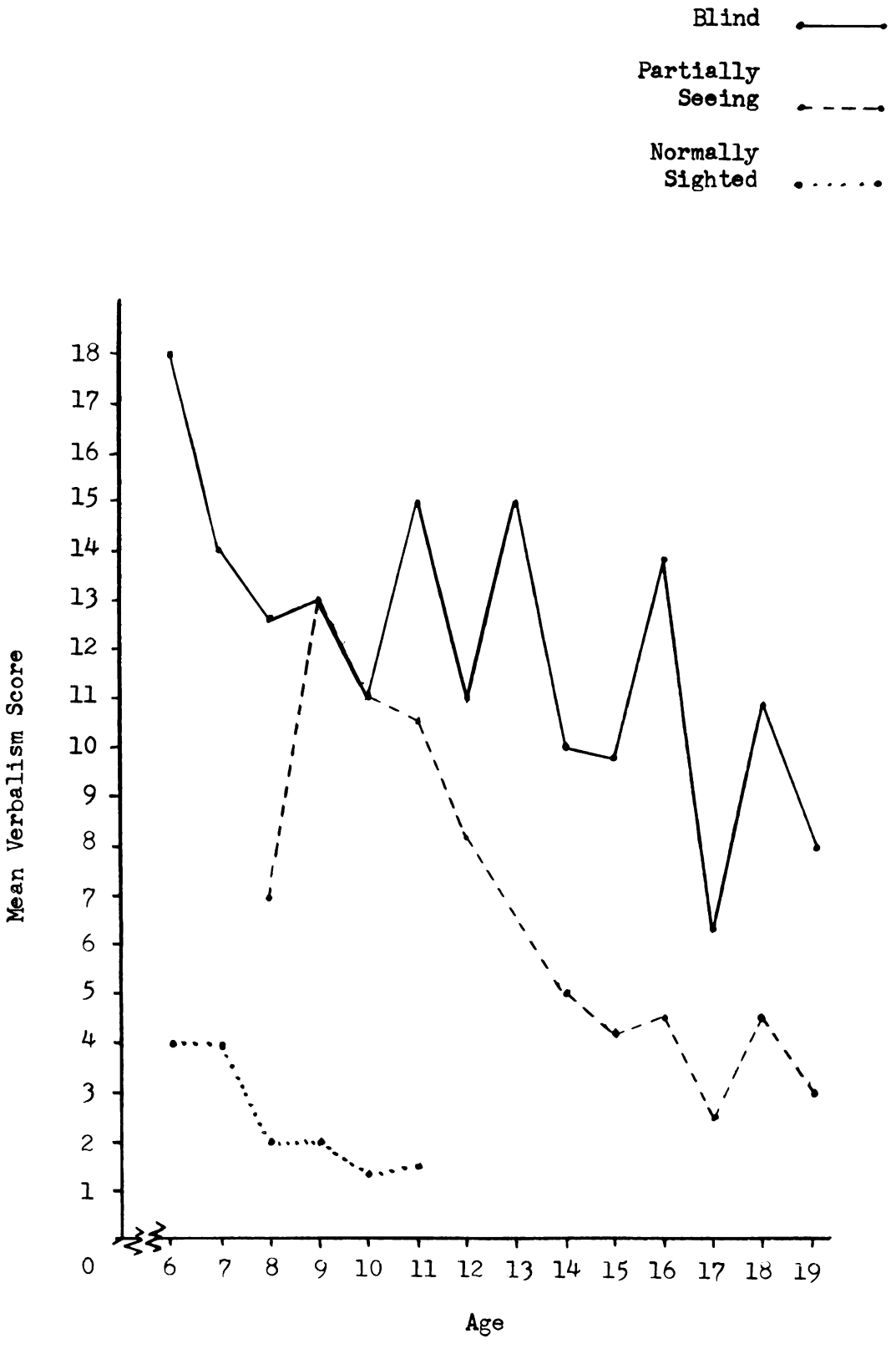

Figure 5.--Mean Verbalism Scores by Age

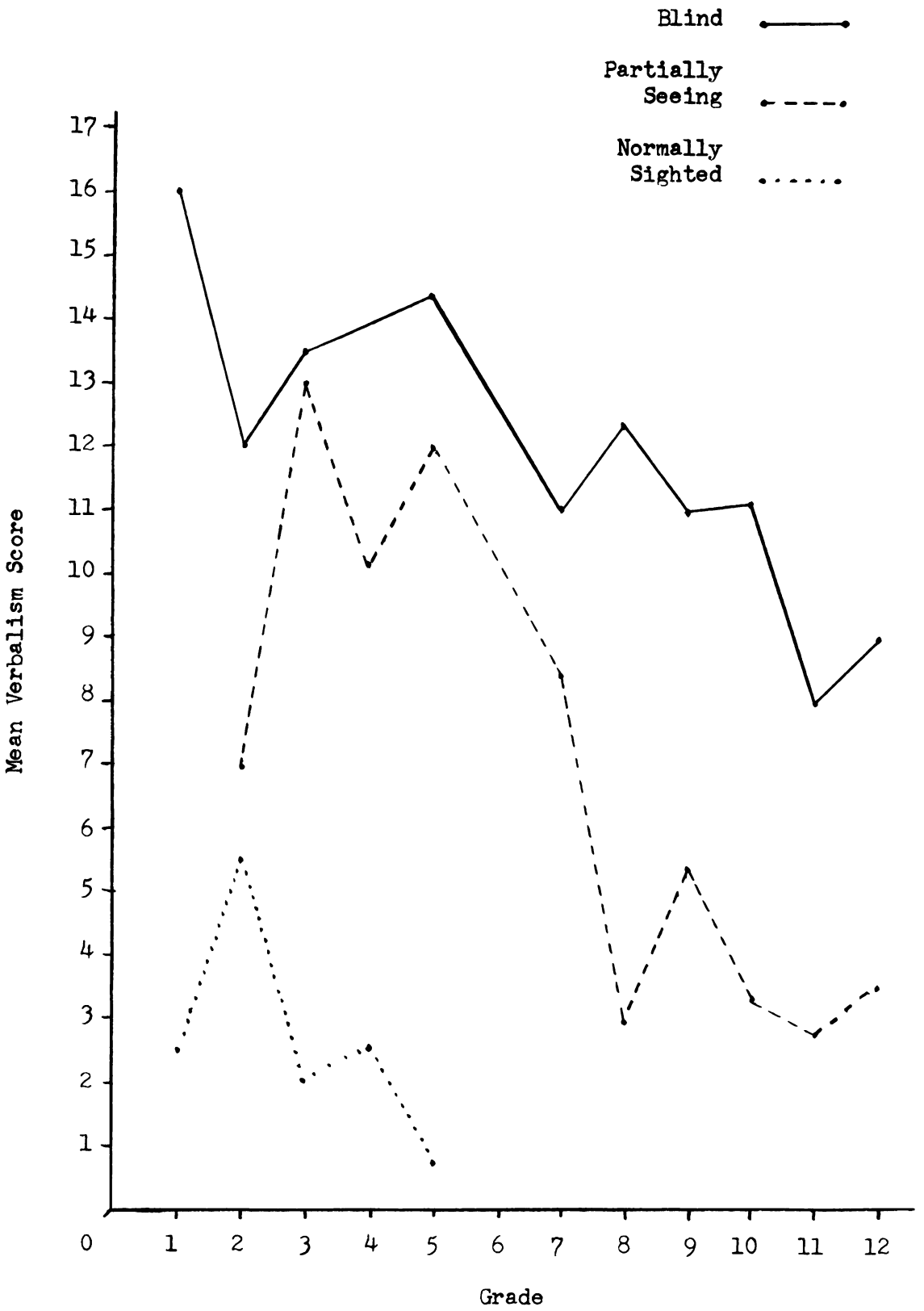

Figure 6.--Mean Verbalism Scores by Grade

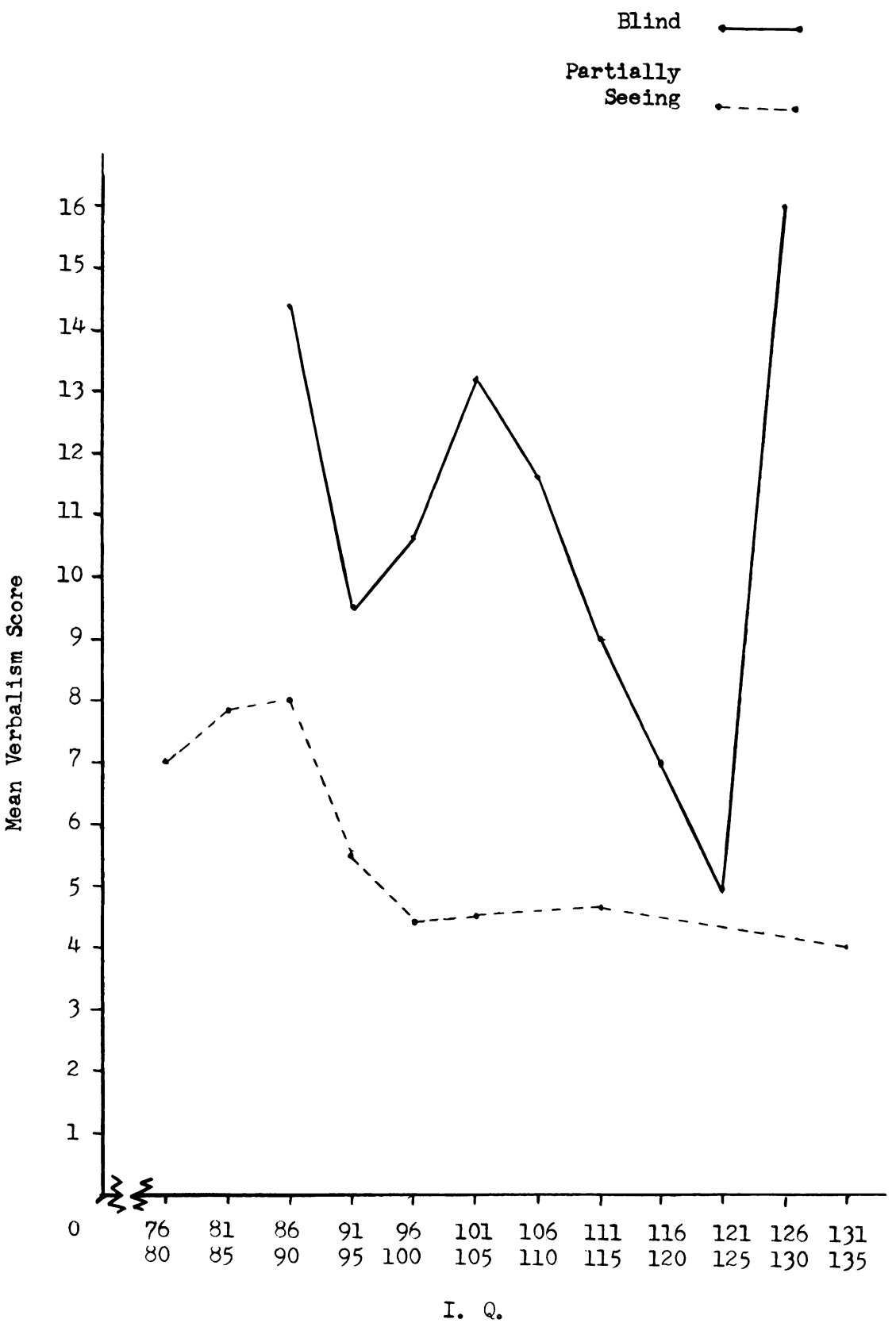

Figure 7.--Mean Verbalism Scores by I. Q.

Comparison of Vocabulary

Additional group differences as well as information to assist with interpretation of the results for Hypotheses I and II were sought by comparing vocabulary scores for the three groups. Since vocabulary tended to reach a maximum by grade six, comparisons were made only for grades one through five. Such a comparison was made possible by not requiring each S to correctly define all words in order to be included in the study.

Because of the small numbers of Ss in each group and the nonnormal distribution of vocabulary scores, a Kruskal-Wallis analysis of variance with correction for ties was used. A summary of results is given in Table 13.

Results yielded a value of .65 for H which does not reach significance. For Ss participating in this experiment, there were no significant differences in vocabulary for those items used.

Comparison of Verbalism

Further information was sought by comparison of verbalism scores for the three groups. A Kruskal-Wallis analysis of variance was again used because of the nonnormal distribution of verbalism scores and because of the small N for each group. Results are summarized in Table 14. Graphic results are illustrated in Figures 5 - 7. The comparison of verbalism scores for Groups A, B, and C yielded an H of 23.20 which was significant beyond the .001 level.

To determine if significant differences exist between each of the three groups, a post hoc analysis was conducted using a Mann-Whitney U test. Results yielded a U value of zero between the

TABLE 13

KRUSKAL-WALLIS ANALYSIS OF VARIANCE
VOCABULARY SCORES FOR GRADES 1 - 5

	Blind	Partially Seeing	Normally Sighted
	30	35	29
	31	36	32
	35	36	35
	35	37	36
	38	38	36
	39	39	37
	39	39	37
	39	39	37
	39	39	37
			38
			39
			39
			39
			39
Sum of Ranks (R)	143	167.5	217.5

[a]H = .65

TABLE 14

KRUSKAL-WALLIS ANALYSIS OF VARIANCE
VERBALISM SCORES FOR GRADES 1 - 5

	Blind	Partially Seeing	Normally Sighted
	9	5	-2
	11	7	-2
	13	7	0
	14	7	0
	14	11	1
	15	12	2
	15	13	2
	17	15	3
	18	18	4
			4
			4
			5
			6
			6
Sum of Ranks (R)	231.5	189.0	107.5

[a]H = 23.20
[b]Significant at .001 level

blind and normally sighted samples which is significant beyond the .001 level. A value of 20 was obtained for a comparison between the blind and partially seeing samples. This value for U is significant at the .05 level. Finally, comparison of the partially seeing and normally sighted groups yields a value of three for U which is significant at the .001 level.

These results indicate significant differences in verbalism scores with the greatest amount of verbalism occuring in blind Ss and the least in normally sighted Ss.

CHAPTER IV

DISCUSSION

Meaning and Vision

The major focus of the present study has centered on the amount and kind of meaning present in words for blind as compared with partially seeing and normally sighted school aged children. The adjective scales used in the semantic differential, when factor analyzed, group into three main factors namely evaluation, potency and activity. These results were consistent with those obtained and reported by Osgood (1962). Results of the present study indicated that blind school aged Ss evaluated or measured concepts in much the same way as did partially seeing and normally sighted Ss. Upon comparing blind, partially seeing and normally sighted Ss' performances on the semantic differential, no significant group differences were obtained.

A significant main effect involving factors indicated that the three factors of evaluation, potency and activity were indeed separate and unique entities.

The significant main effect involving concepts indicated that Ss responded to each concept independently and that each occupied an unique meaning space.

Another significant result involved the interaction of factors with concepts. This result revealed the fact that the score

or value for a given factor depended on the concept being evaluated. For example, the concept friend was rated high on the evaluation factor, near neutral in potency and slightly above neutral in activity; whereas, the concept fire was rated low on evaluation, above neutral on potency and very high on the activity factor.

There was also an interaction effect between concepts and groups. By plotting the scores illustrated in Figure 3, it was possible to pull out those concepts which were making up the interaction. Seven concepts elicited highest mean scores by blind Ss and lowest mean scores by normally sighted Ss with partially seeing Ss being intermediate namely, America, bonnet, city, clouds, friend, God and squirrel. The positions of mean scores for blind and sighted Ss were reversed or nearly so for the four concepts, hippie, plow, rice and riot.

At first the temptation is for the investigator to interpret specific concepts involved or not involved. If one notes that a mean score of 15 is a neutral response a reexamination of Figure 3 will reveal that, for the main, spread in distance as well as relative position for concept scores can be accounted for by a greater tendency for blind Ss to select more neutral responses. Sighted Ss tended toward the most extreme scores of the three groups.

It appears from these results that normally sighted Ss, while not giving significantly different meanings to concepts, tend toward more extreme values when rating concepts on the semantic differential. As vision decreased, there was a corresponding increase in the tendency toward more neutral responses.

The exact role that vision played in these results is not clear. Blind Ss may have been more cautious or less confident or it may be that vision added an increment of meaning which, while not significantly altering the total meaning of a concept, could be measured. While there was no supportive evidence, the former seems the most tenable. Clarification requires further investigation.

The concepts by factors by groups interaction appears to be a compounding of the concepts by factors and the concepts by groups interactions. It also appears to be contributed to by the tendency toward more neutral responses by blind Ss.

From the evidence obtained through comparing affective meanings for blind, partially seeing and normally sighted Ss on the semantic differential it appears that degree of vision influences the tendency toward extreme responses but it does not significantly affect the meanings given to concepts. As measured by the semantic differential, words, whether representing abstract concepts or concrete objects, have much the same meanings for blind, partially seeing and normally sighted Ss.

Factor analysis of concepts, for which results are listed in Tables 8 - 10, demonstrated that while concepts had unique meanings they still tended to cluster with other similar concepts.

The failure of concepts having visual components to differentially affect individuals with varying amounts of vision provides strong support to a word-word basis for the acquisition of meaning.

The first consideration of importance is the strong similarity of the factors and their associated concepts between groups. The

fact that concepts tended to cluster into similar factors for each of the groups supports previous evidence that meanings for the various concepts remained constant across groups. Degree of vision does not appear to significantly affect the affective meanings which blind Ss give concepts despite the fact that the majority of the blind Ss were unable to identify any of these objects.

Meaning and Verbalism

When blind Ss identified as high and low verbalizers were administered the semantic differential, the results were identical to those for the previous comparison except that the two additional interaction effects of concepts by groups and concepts by factors by groups failed to reach the .05 level of significance. It appears that the inability to identify objects, that is the increase of verbalism behavior, does not significantly alter the affective meanings given to concepts in general.

On the basis of the preceding evidence, the meaning that a concept takes on for a group of blind Ss is not significantly influenced by the degree of verbalism demonstrated by those same Ss. Since the association between these words and the objects they signify is weak, as demonstrated by high verbalism scores for blind Ss, the meanings for those same words remain relatively constant across groups regardless of vision, and the word-word association model of meaning is supported.

In referring to the word-word association model it must be noted that two types of word-word associations are possible. The two types of associations differ in their ultimate link with sensory experience.

First, are word-word associations which have no ultimate link with experience. Words associated with other words which themselves have no basis in experience remain meaningless. Thus, the words learned in such a manner remain isolated from meaning. A second class of word-word associations involves the acquisition of meaning through the association of words with other words which have acquired meaning through experience. Thus, new words can acquire meaning through their association with words that have a basis in experience. The new words come to share a portion of the meaning held by those words with which they are associated.

As evidenced by the strong similarity of affective meanings between vision groups, the second class of word-word associations appears to exemplify the words studied in the present research.

Verbalism and its Correlates

Results of the present study revealed two correlates of verbalism in the blind, namely, grade level and I. Q. Harley (1963) gathered data revealing age, experience and I. Q. as correlates of verbalism. While not reaching significance, the present study did give some evidence toward age as a possible correlate. Together these results indicate that, with an increase in age, grade level, experience or I. Q., there will be a corresponding decrease in verbalism for blind school aged children.

Differences in the results of the study by Harley (1963) and the present study, concerning age as a correlate of verbalism may in part be caused by the difference in treatment. Harley made correct definition of all terms a criterion for a S to be included

in the study. The present study included Ss who had not correctly defined all items.

Since younger Ss more often failed to correctly define items than did older Ss, their verbalism scores may tend to be reduced compared to Ss in the study by Harley. The correlation existing between verbalism and age may be reduced by spuriously low scores for Ss not correctly defining all items.

A second factor which may have resulted in differences for the two studies may be the comparative difficulty of the two lists. In modifying the items used in the study by Harley (1963) for use in the present study, the list was noticeably reduced in difficulty. The mean verbalism scores in Harley's study was 21.40 while a mean score of 11.4 was obtained in the present study. A less difficult list of items with a greater percentage being correctly identified may reduce the range of scores and thereby affect the resulting correlations.

Verbalism and Vision

When compared with partially seeing and normally sighted Ss, blind Ss have a significantly greater number of verbalisms. Verbalism, as measured by the present study, demonstrated that vision, in and of itself, permits recognition of common objects much more readily than does other sensory modalities, particularly touch.

Worthy of note is the fact that normally sighted Ss also have verbalisms. This was particularly true for the younger Ss. As age increased, verbalism rapidly dropped off until in some cases

Ss were able to identify some objects they failed to correctly define. For some normally sighted Ss there was what might be called a negative verbalism.

When the group differences in verbalism are examined in light of the semantic differential data, there is further evidence that verbalism in the blind does not significantly affect the affective meanings of concepts in general. As proposed by Dokecki (1966) the evidence supports a position that enough of meaning derives from within the language through word-word associations that verbalisms in the blind do not render words meaningless.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

One group each of 41 blind, 41 partially seeing and 61 normally sighted Ss participated in an experimental study designed to investigate the relationships between verbalism and meaning.

Verbalism was defined as the inability to identify a common object after having previously correctly defined the word representing the object. It was measured by first administering a 39 item vocabulary list and then presenting each S with the actual objects named on the list and requesting him to name them.

After determining verbalism scores for all blind and partially seeing Ss and for normally sighted Ss in grades one through five, all Ss were administered a semantic differential consisting of 15 concepts which were each rated on 15 five point adjective scales.

Results of the experiment revealed the following information.

1. Factor analysis of scales yielded three main factors, evaluation, potency and activity
2. Comparison of blind, partially seeing and normally sighted Ss by three-way analysis of variance yielded no significant group differences in affective meaning for the 15 concepts

3. A tendency for blind Ss to select more neutral responses on the semantic differential caused an interaction effect between concepts and groups
4. Factor analysis of concepts yielded three major clusters made up of nearly identical concepts for each of the three groups
5. Comparison of blind Ss identified as high and low verbalizers by use of a three-way analysis of variance yielded no significant group differences in affective meaning as measured by the semantic differential.
6. Verbalism correlated significantly and negatively with grade level and I. Q.
7. Analysis of variance revealed significant differences between the three vision groups on verbalism with the blind sample obtaining the greatest percentage of verbalisms and the normally sighted the least

Conclusions

Verbalism and meaning.--To the degree that the present study measured meaning, there appears to be no significant differences in the meaning of general concepts as a function of verbalism. Meanings appear to derive from within the language. Many concepts, despite their visual connotations or components, appear to share very similar meanings for both blind and sighted.

Verbalism and its correlates.--Verbalism and its negative correlation with grade and I. Q. combined with the evidence gathered by Harley (1963) appears to indicate a general reduction in verbalism

as one increases in experience, matures, advances in school or has increased intellectual ability. Familiarity with the language and experience with objects and their manipulation no doubt contribute toward this phenomenon.

Implications for educational practice.--Since meanings for concepts are shared by both blind and normally sighted Ss as well as by Ss exhibiting either many or few verbalisms, the role of language in meaning is clarified. Verbalisms are not meaningless but the words themselves have real and, as measured by their approximation to the norm, accurate meanings. Considerable meaning derives from within the language. Verbal communication should be encouraged. Experience and familarity with many objects in a variety of settings should be pursued for its contribution to intellectual development and not as a substitute for language as is often implied by studies of verbalism. By encouraging as wide a range in vocabulary as possible, a more complete communication vehicle is open to the blind.

Implications for further research.--Before dismissing the idea that verbalism lacks meaning, it might prove profitable to compare meanings for items correctly identified by half the Ss. By using a semantic differential to compare Ss who can identify each object with Ss who can not identify each object, a more direct test of the relationship between verbalism and meaning would be possible.

It is also possible that adjective scales which are more visually relevant would reveal meanings for concepts which differ for the three groups studied. For example, adjective scales such as

bright-dull or dark-light might produce group differences which reveal meanings most appropriate for normally sighted Ss.

Finally, maturation of the sense of touch and the role it plays in identifying objects needs to be investigated. It may be that high verbalism scores, particularly among younger Ss, result from an inability of blind Ss to tactually identify objects with which they are actually familiar. It is possible that until an individual has experience with the tactile sense and only after considerable maturation will one be able to adequately use touch to recognize readily even somewhat familiar objects.

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APPENDICES

APPENDIX A 1

GROUP A (BLIND)

Subject	Age Years	Age Months	Grade	Sex	I. Q.
1	7	11	1	M	-
2	6	5	1	F	-
3	8	10	2	M	-
4	8	10	2	F	-
5	9	4	3	M	-
6	8	9	3	F	-
7	13	6	5	M	86
8	10	9	5	M	120
9	11	3	5	F	91
10	12	6	7	M	99
11	12	7	7	F	105
12	15	7	8	M	89
13	13	11	8	M	86
14	14	10	8	F	95
15	16	7	9	M	90
16	16	1	9	M	105
17	15	6	9	M	111
18	15	1	9	M	110

Appendix A 1 Continued

Subject	Age Years	Age Months	Grade	Sex	I. Q.
19	14	8	9	M	123
20	14	8	9	M	127
21	15	3	9	F	111
22	14	0	9	F	118
23	19	2	10	M	98
24	17	4	10	M	91
25	16	7	10	M	106
26	15	10	10	M	124
27	15	10	10	M	128
28	16	2	10	F	90
29	16	1	10	F	111
30	15	10	10	F	109
31	15	7	10	F	108
32	15	3	10	F	115
33	17	3	11	M	98
34	16	8	11	M	105
35	16	6	11	M	100
36	16	4	11	M	104
37	18	5	11	F	86
38	17	3	11	F	93
39	15	6	11	F	115
40	18	1	12	F	102
41	16	9	12	F	117

APPENDIX A 2

GROUP B (PARTIALLY SEEING)

Subject	Age Years	Age Months	Grade	Sex	I. Q.
1	8	6	2	F	-
2	9	1	3	F	-
3	12	1	4	M	89
4	12	0	4	M	80
5	11	8	4	M	81
6	11	0	4	F	104
7	10	5	4	F	98
8	11	2	5	M	105
9	11	9	5	F	95
10	14	1	7	M	84
11	12	6	7	M	94
12	12	1	7	F	112
13	14	7	8	M	106
14	14	2	8	M	93
15	14	9	8	F	86
16	16	2	9	M	91
17	15	7	9	M	105
18	14	3	9	M	133

Appendix A 2 Continued

Subject	Age Years	Age Months	Grade	Sex	I. Q.
19	16	9	9	F	91
20	14	9	9	F	103
21	18	8	10	M	89
22	16	1	10	M	113
23	15	11	10	M	115
24	15	6	10	M	95
25	14	6	10	M	105
26	17	10	10	F	84
27	16	8	10	F	103
28	16	6	10	F	91
29	15	8	10	F	99
30	18	0	11	M	86
31	17	10	11	F	104
32	17	3	11	F	100
33	17	2	11	F	85
34	17	4	12	M	116
35	17	1	12	M	105
36	16	10	12	M	131
37	19	7	12	F	103
38	19	3	12	F	92
39	18	8	12	F	92
40	18	2	12	F	99
41	17	9	12	F	112

APPENDIX A 3

GROUP C (NORMALLY SIGHTED)

Subject	Age Years	Age Months	Grade	Sex	I. Q.
1	7	2	1	M	-
2	6	11	1	F	-
3	7	8	2	M	-
4	7	11	2	F	-
5	8	5	3	M	-
6	8	5	3	F	-
7	10	3	4	M	-
8	9	10	4	M	-
9	9	11	4	F	-
10	9	4	4	F	-
11	11	9	5	M	-
12	11	1	5	M	-
13	10	10	5	M	-
14	10	9	5	M	106
15	10	9	5	F	-
16	13	6	7	M	97
17	12	7	7	M	101
18	12	1	7	F	106

Appendix A 3 Continued

Subject	Age Years	Age Months	Grade	Sex	I. Q.
19	15	7	8	M	83
20	13	7	8	M	86
21	14	6	8	F	87
22	16	9	9	M	88
23	15	0	9	M	104
24	15	0	9	M	124
25	14	10	9	M	108
26	14	9	9	M	107
27	14	4	9	M	124
28	14	9	9	F	111
29	14	5	9	F	100
30	14	1	9	F	115
31	16	10	10	M	109
32	16	0	10	M	110
33	15	11	10	M	132
34	15	10	10	M	123
35	15	9	10	M	91
36	15	0	10	M	103
37	16	9	10	F	99
38	16	6	10	F	96
39	15	8	10	F	94
40	15	8	10	F	108
41	15	8	10	F	106

Appendix A 3 Continued

Subject	Age Years	Age Months	Grade	Sex	I. Q.
42	15	4	10	F	105
43	15	1	10	F	114
44	17	11	11	M	88
45	17	6	11	M	95
46	17	0	11	M	108
47	16	10	11	M	105
48	16	6	11	M	100
49	17	3	11	F	95
50	16	11	11	F	97
51	16	8	11	F	86
52	16	0	11	F	111
53	17	6	12	M	100
54	17	2	12	M	129
55	17	2	12	M	112
56	18	4	12	F	92
57	18	4	12	F	88
58	17	10	12	F	99
59	17	9	12	F	114
60	17	9	12	F	102
61	17	3	12	F	114

APPENDIX B 1

VOCABULARY LIST

Apple	Fishhook	Rice
Apron	Flag	Saw
Banana	Giraffe	Screw
Bell	Grapes	Sponge
Bonnet	Hinge	Squirrel
Car	Hoe	Tangerine
Cherries	Kite	Tractor
Chick	Lemon	Trombone
Cigar	Mousetrap	Umbrella
Clippers	Orange	Velvet
Corn	Pear	Violin
Cow	Rabbit	Watch
Elephant	Rake	Plow

APPENDIX B 2

DESCRIPTION OF OBJECTS USED FOR IDENTIFICATION

*Apple

*Apron

*Banana

*Bell - brass hand bell

*Bonnet - cotton, adult size

Car - 1/25 scale model

Cherries - clump plastic similated cherries

Chick - all wool, manufactured by Steiff

*Cigar

*Clippers - fingernail clippers

*Corn - ear of field corn

Cow - 1/15 scale model of guernsey cow

Elephant - rubber, 4 inches long

*Fishook

*Flag - toy flag on stick

Giraffe - rubber toy manufactured by Creative Playthings

*Grapes - bunch of Concord grapes

*Hinge - 3 inch metal door hinge

---

*Notes use of the actual object

Appendix B 2 Continued

*Hoe - garden hoe

*Kite

*Lemon

*Mousetrap

*Orange

*Pear

Plow - toy farm plow manufactured by Ertl

Rabbit - rubber caricature of sitting rabbit

*Rake - garden rake

*Saw - crosscut hand saw

*Screw - flathead wood screw

*Sponge - synthetic sponge

*Squirrel - mounted, in sitting position

*Rice - uncooked yellow rice

Tangerine - plastic similated, actual size

Tractor - toy farm tractor manufactured by Ertl

*Trombone

*Umbrella

*Velvet - 4 inch square piece

*Violin

*Watch - wristwatch

APPENDIX C 1

SAMPLE ITEMS FOR SEMANTIC DIFFERENTIAL

BABY

Sample I

: _____ : _____ :
heavy light

Sample II

: _____ : _____ : _____ : _____ :
very heavy | heavy | light | very light

Sample III

heavy : _____ : _____ : _____ : _____ : _____ : light
very heavy | heavy | neither heavy nor light | light | very light

APPENDIX C 2

SEMANTIC DIFFERENTIAL ITEM ADMINISTERED TO NORMALLY SIGHTED

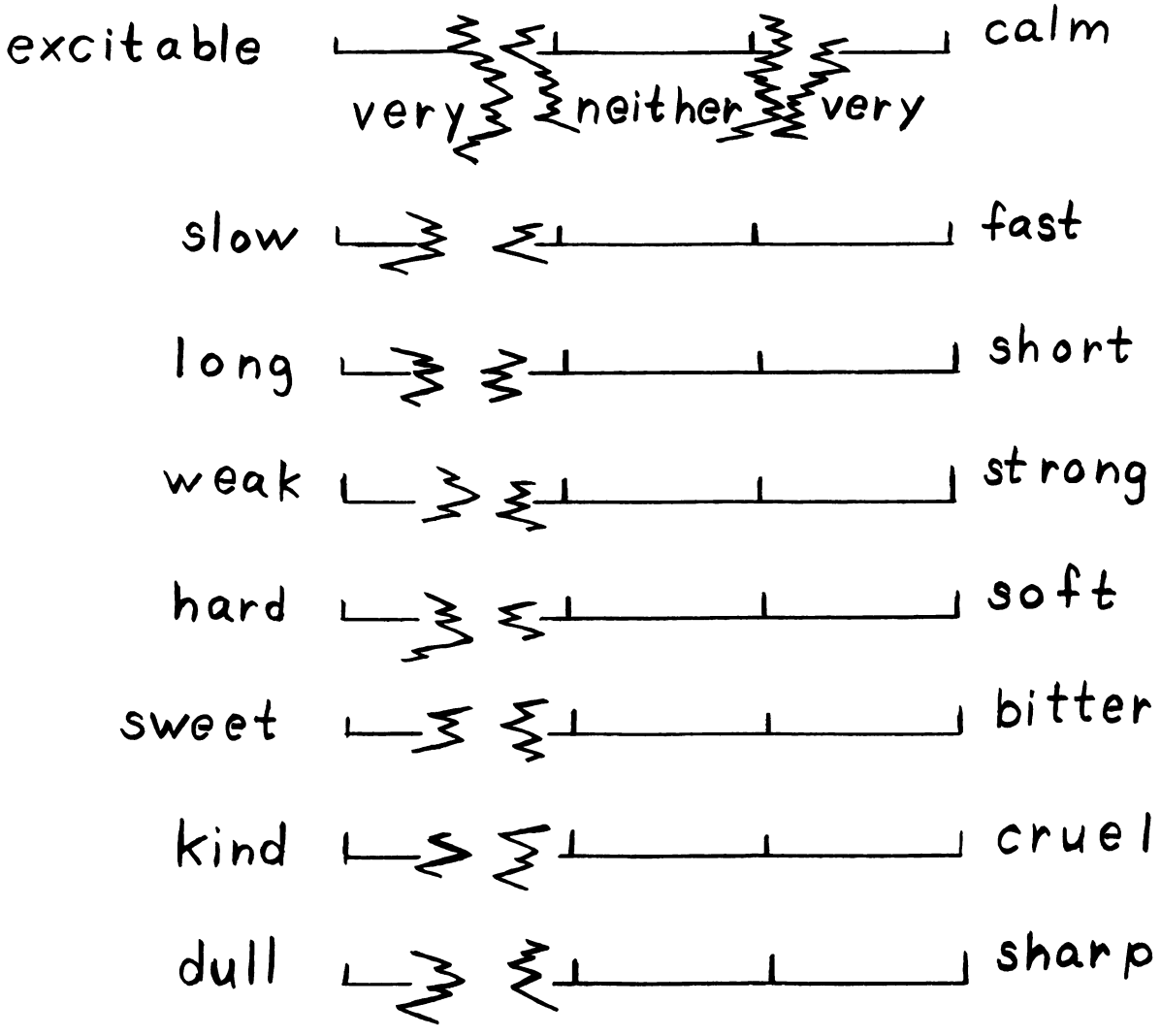
AMERICA

slow	:	:	:	:	:	: fast
	very		neither		very	
long	:	:	:	:	:	: short
	very		neither		very	
weak	:	:	:	:	:	: strong
	very		neither		very	
hard	:	:	:	:	:	: soft
	very		neither		very	
sweet	:	:	:	:	:	: bitter
	very		neither		very	
kind	:	:	:	:	:	: cruel
	very		neither		very	
dull	:	:	:	:	:	: sharp
	very		neither		very	

APPENDIX C 3

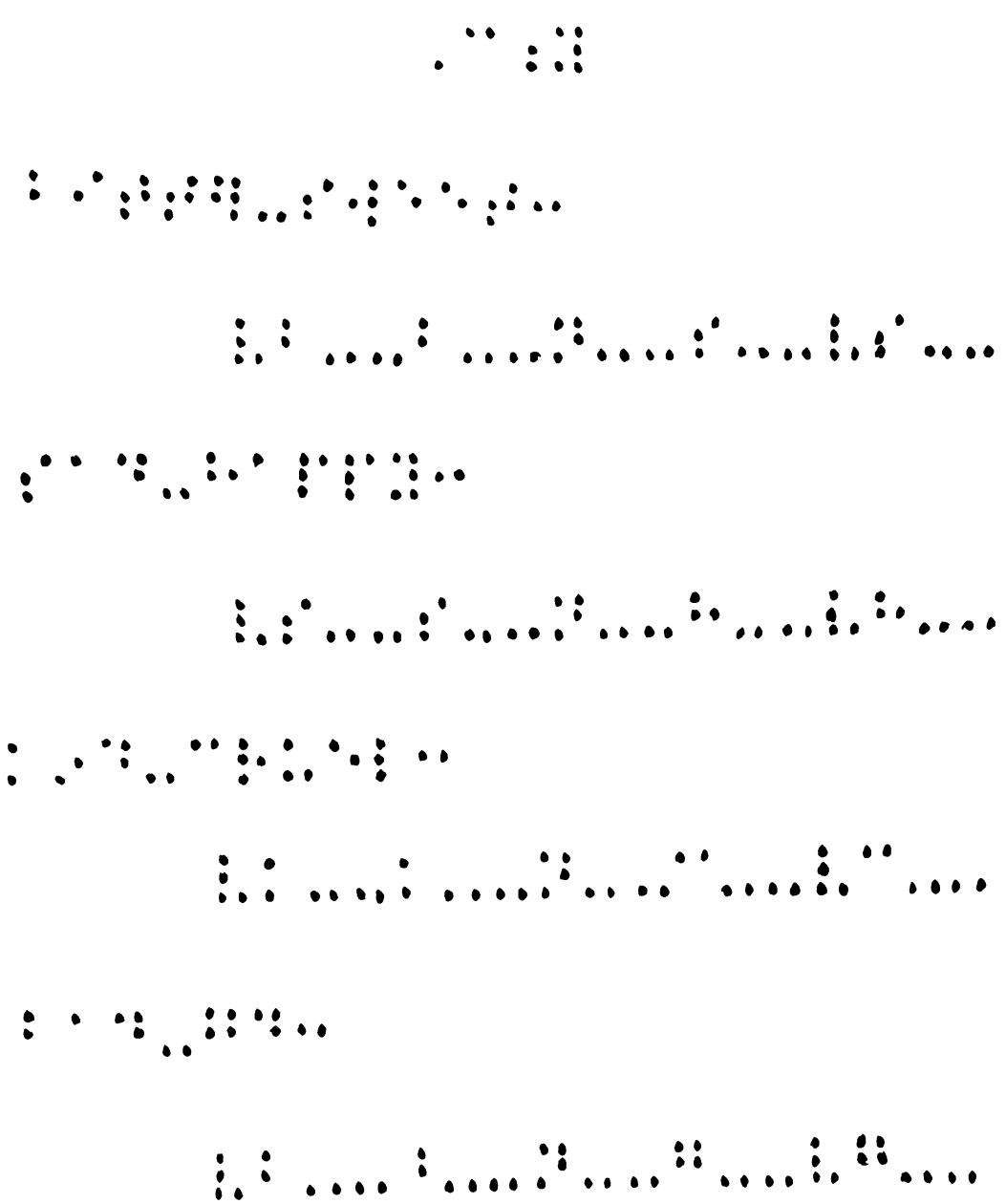
SEMANTIC DIFFERENTIAL ITEM ADMINISTERED TO LARGE PRINT READERS IN PARTIALLY SEEING SAMPLE

AMERICA



APPENDIX C 4

SEMANTIC DIFFERENTIAL ITEM ADMINISTERED TO BRAILLE READERS IN BLIND AND PARTIALLY SEEING SAMPLES



APPENDIX D

GRAND MEAN FACTOR AND CONCEPT SCORES FOR BLIND, PARTIALLY SEEING AND NORMALLY SIGHTED

Factors / Concepts	Evaluation	Potency	Activity
America	10.9	10.5	11.4
Bonnet	11.5	18.3	15.1
City	12.4	12.0	11.3
Clouds	12.6	16.1	15.1
Fear	19.2	13.1	13.5
Fire	19.0	12.7	9.5
Friend	9.4	14.2	12.6
Hippie	15.4	14.4	14.3
God	8.0	12.6	12.5
Plow	14.1	9.7	13.1
Rice	13.4	18.3	15.0
Riot	21.4	11.7	10.9
Slum	20.0	14.0	15.7
Soldier	13.3	12.1	11.3
Squirrel	11.5	17.6	11.4

APPENDIX E

GRAND MEAN FACTOR AND CONCEPT SCORES FOR BLIND HIGH AND LOW VERBALIZERS

Factors / Concepts	Evaluation	Potency	Activity
America	11.4	11.1	11.7
Bonnet	12.4	17.9	15.7
City	12.7	12.5	11.9
Clouds	13.4	15.8	15.2
Fear	18.6	12.8	14.1
Fire	19.2	12.5	10.2
Friend	10.0	14.1	13.6
Hippie	15.2	14.5	13.5
God	8.7	12.4	13.0
Plow	13.5	10.1	12.8
Rice	13.3	17.2	14.5
Riot	20.9	12.0	11.3
Slum	19.0	14.8	15.5
Soldier	12.6	12.5	11.3
Squirrel	12.4	17.1	12.2