A QUANTITATIVE ANALYSIS OF THE VISUAL TERMS USED BY THE BLIND IN THEIR SPOKEN LANGUAGE

BY

NATESH RATHNA

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Director of Thesis

Doctoral Committee: _____, Chairman

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To

My- Father

To him I owe my education, my life.

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CHAPTER I

THE STUDY AND ITS PURPOSES

> Today I saw him again, really a man of many faces, all beautiful. Not only brahmin, regal, English, but ingenious politician saint, good theoretician. Face so expressive, more photogenic than any I have seen. Face to win confidence anywhere.1

The above is a passage from a book by Ved Mehta, a blind writer. The passage abounds in visual images and writers who are blind seem to fall into a trap of visual terminology which they cannot have really experienced. Many examples of visual terminology can be drawn from the writings of Helen Keller; but this need not be done here because many writers on the blind have done so and a repetition does not seem warranted. Helen Keller, suffice it to say, also uses visual words and conjures up vivid visual pictures which seem to surprise all those who know she is blind. Writers like Gutsforth, Chevigny, and Villey, who will be discussed later, show concern over the overuse of visual images by the blind. The present investigator has noted that at least one of each three workers with the blind mentions the frequency with which blind children use terms that belong to the world of the seeing.

A review of the literature on the blind reveals that while many of the writers express a concern over this use of visual words there is a scarcity of systematic study in the area. Two studies were made, one by Gutsforth and the other by Maxfield. Both of these studies were made some thirty years ago and had many limitations. Cutsforth,2 who

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1 Mehta, V., Walking the Indian Streets, p. 14.

2 Cutsforth, T. D., The Blind in School and Society, pp. 48-70.

is the most outspoken of the writers, termed this use of visual words "hypocrisy in verbalism." The twenty-six children he used were congenitally blind; but it was not indicated as to how blind they were. Maxfield's3 eight children varied in the age of onset of blindness and some of them had some light perception. Neither study compared the language of the blind-with the language of the sighted. This seems to be necessary if a value judgment has to be made regarding the "excessive" use of visual imagery by the blind.

The scarcity of experimental studies in the area of visual language of the blind and the time lapse since the earlier two studies added to the limitations of the said studies suggest more studies in this area. Such studies as this pose a few problems. These are primarily problems of definition. One has to know how blind the blind are or how much the blind can see or have seen before one can say whether or not use of visual imagery by the blind is hypocritical. There does not seem to be any reason for concern over the use of visual words by people who can partially see or those who have once seen. Concern seems justified only when the blind, totally and congenitally blind, who have no visual reference point use visual words. However, one has also to define what constitutes a visual term. There are many visual terms in the English language which have taken on nonvisual connotations. It is thus possible for many terms, that are visual for the sighted, to have become nonvisual for the blind. Finally, many visual words might have just become parts of a natural pattern of the language. Visual

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3Maxfield, K. E., "The Spoken language of the Preschool Blind Child," Archives of Psychology 201:67-71, May, 1936.

words may be used for want of better substitutes. In the face of these problems, one needs to define what makes an "excessive" use of visual words.

Statement of the Problem

Based on the above discussion, the present study was planned as a quantitative analysis of the visual terms used by the blind in their spoken language as compared to the visual terms used by the sighted. A schedule, a questionnaire to be presented in person, was prepared in order to elicit a considerable amount of running speech. This schedule was presented to a group of twelve totally blind children and to a group of twelve sighted children* The groups were matched individually with reference to sex, race, age, grade level and scores on the verbal part of the Wechsler Intelligence Scale for Children.

The study consisted of two parts: (l) a quantitative comparison of the number of visual words used by the two groups and (2) a study of the nature of the visual terms used.

The quantitative comparison would answer the question of whether or not the blind used more visual terms than the sighted. If they did use more of them, then and only then, could Cutsforth's charge of "hypocrisy in verbalism" be considered to have merit. It would then become necessary to make another study to ascertain why the blind used more visual terms than the sighted. If it were found that the blind who overused visual terms were trying to talk like the seeing for no other reason than to be taken for the seeing, it would indicate poor adjustment of the blind and that the educators of the blind were somehow

failing in helping the blind to live as effective blind people. It mould also suggest a reevaluation of the programs for the blind in terms of mental health requirements.

The study of the nature of visual terms, it is assumed, would indicate whether the visual words were really visual or only apparently visual (defined on page 7). Indicators were sought in the study to demonstrate what concepts the blind had of visual terms. A thorough study of this phenomenon—visual concepts in the blind—was beyond the scope of this study. Nevertheless, an attempt at understanding this had to be made in analyzing the nature of the visual terms used by the blind. A distinction had to be made between the visual terms and the apparently visual terms. Apart from helping to clarify decisions about visual terms, the second part of the study, it was believed, would provide indicators to paths of concept formation in the blind.

Therefore, this quantitative analysis of the visual terms used by the blind as compared to the visual terms used by the sighted was planned to provide some experimental evidence for or against the statement, made quite frequently by educators of the blind, that the blind use many visual terms. As a part of this study, the words used were to be grouped into categories of the parts of speech to see if any pattern existed in the visual words used.

Hypotheses

The study sought to answer the following questions:

1. Do the blind use more visual words than the sighted?
2. What concepts do the blind have of visual words?

3. How does the age of the blind affect the number of visual words used? Does the number increase or decrease with an increase in age?

4. Do the blind think of objects in terms of visual words?

5. What general concepts of visual experiences or concepts of color, shape, and size do the blind have?

6. Can the visual words used by the blind be classed into any one major group of parts of speech or any other similar grouping?

The hypotheses of the present investigator with reference to the questions were as follows:

1. The blind do not use as many visual words as the sighted, because they have no visual reference point.

2. When they do use apparently visual words or terminology they do not conceive these words in visual contexts. Other connotations of the words are employed,

3. Because the blind can not have visual associations, they can define visual words only with secondhand words or words used by somebody else. Somebody always explains the terms and these are the only definitions the blind can find for directly visual words.

4. An increase in age would bring about an increase in the number of visual terms or apparently visual terms used. This could be attributed to an increase in vocabulary and also to an increase in the number of opportunities for communication with the sighted.

5. The blind do not think of objects in visual terms because they do not have visual experiences.

6. Visual concepts if any would be formed more with reference

to the words themselves than with reference to the sensory experience. The concept then, would not necessarily depend upon an initial experience. Visual terms, in general, remain as mere words.

7. The visual words used by the blind would predominantly fall under one category.

Limitations

1. The study was restricted to the congenitally blind who were also totally blind to avoid any possible visual association.

2. Only the children who had been given an intelligence test by competent people authorized by the schools in which the children were enrolled were included in the study. This criterion was used to satisfy the demands of time and also to stay within the capabilities of the investigator who could not have administered the psychological tests.

These two criteria kept the number of subjects low. Though the number of spoken words obtained is quite large, the paucity of subjects must have affected the study.

3. The sighted children were selected by matching them individually with reference to race, age, sex, grade level, and WISC verbal scores. The vagaries of the matching procedure must have limited the study's effectiveness to some extent in that matching can only limit variation, never absolutely equate.

4. Socio-economic levels were not matched. While this would have proved useful, it was not found practical for the purposes of this study.

5. The blind children came from a residential school while the sighted did not. This variable has not been controlled for want of a sighted population in a residential school which does not involve other problems. The Boys School could be an example of a place where a sighted population in a residential school could be obtained.

6. The study was delimited in scope only to a quantitative analysis of visual terms and a cursory analysis of visual concepts. It was not intended that it should seek the reasons for the use of visual terms nor was it expected to provide an understanding with certainty of the concept formation in the blind.

Definitions

1. Blind. Throughout this study, unless when used in quotations from other authors, the word blind means the congenitally blind without even light perception. In other words, for purposes of this study, the blind have never seen anything. The children were selected with reference to this definition. The medical reports in the school files were used for reference.

2. Visual terms, visual imagery, visual concept. These terms refer to those terms, images and concepts whose perceptions are principally dependent upon the sense of vision. Color, large shapes, and intangible sizes and words related to the forementioned fall in this category.

3. Apparently visual terms. An apparently visual term is a visual term which takes on nonvisual connotations, instead of or in addition to the visual connotation. An example of this is the word see which can be used to mean study visually, think or understand. When

"see* means visual perception, it is a visual term; but when it means think or understand it is only an apparently visual word because the word is apparently visual and has taken on nonvisual connotations.

4. Visual reference point. The sighted have experienced visual events. They have seen color, for example, and when they hear a color word they can refer to an earlier experience to comprehend the term. The first experience of the event is a learning experience and becomes a reference point with which later experiences can be compared. This, in visual events, becomes the visual reference point. The blind have not seen and therefore have no visual reference point.

5. Schedule. A schedule is a questionnaire presented in person. This aids in elaborating and clarifying the questions asked.

CHAPTER II

REVIEW OF LITERATURE

The use of visual images by the blind has been the concern of many writers on the blind. However, this concern does not seem to have resulted in adequate systematic study of the use of visual words by the blind. The general consensus of theoretical aspects of this problem is well summed up by Lowenfeld.

> Since they live in a world which makes constant use of color observations and color references, they build up substitutive ideas for color on the basis of verbal, sensory, and emotional associations. . . . Excessive and unrealistic use of color words by blind individuals is not rare and can, in many cases, be regarded as a compensatory mechanism.

As early as 1749 A. D. Diderot, the French philosopher, wrote in his "Lettre Sur les Aveugles" that the blind man from Puisseaux spoke of mirrors.[2] Diderot goes on to explain that:

> He speaks sensibly as we on the qualities and defects of the organ which he lacks. If he attaches no idea to the terms he makes use of, yet he has the advantage over most other men in that he never uses them wrongly. He speaks so wisely and so well of so many things absolutely unknown to him.

Cutsforth, who calls this habit of use of visual words by the blind "word-mindedness or verbalism"3, is the most outspoken against it. He claims that it is easy to locate examples of verbalism in the speaking

1Lowenfeld, B., "Psychological Problems of Children with Impaired Vision," in Psychology of Exceptional Children and Youth, p. 225.

2Diderot, Diderot's Early Philosophical Works, p. 71.

3Cutsforth, T. D., The Blind in School and Society, p. 56.

and writing of the blind.[4] Cutsforth places the blame for this on the educational and social systems.

> The unique social and educational situation in which the blind are placed creates the necessity of treating a vast world of unreality in some realistic manner. This necessity has produced the much-discussed verbal-mindedness of the blind.[5]

He quotes extensively from Helen Keller and says that she was reared "in the literary tradition that Howe introduced into the education of the blind," He contends:

> This method of education, which in essence, was an emulation of the literary and informational achievement of the seeing, produced an optimum condition for word-mindedness. . . . It is a system which inevitably sacrifices reality on the altar of literary hypocrisy. It is a birthright sold for a mess of verbiage."

Cutsforth is quite concerned about the effects of verbalism. He fears that "too rapidly thrusting the blind into a world of unreality produces loose and uncritical habits of thinking."[7] He adds, "the discrediting of a meaningful world by the addition of a visual superstructure in which the blind must dwell but not live produces an injurious attitude towards the self."[8]

> It is difficult, if not entirely impossible, to persuade educators of the blind to see the psychological necessity of

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4Ibid., p. 65.

5Ibid., p. 48.

6Ibid., p. 56.

7Ibid., p. 61.

8Ibid., p. 51.

> having the blind pupils value their own world first, before emulating the experiences of other, and forever foreign, lives.9

French10 also emphasizes the importance of giving that form of education which involves "reality" to the blind. The worship of mere "words," he felt, must be deemphasized. It is his belief that, "blind writers have been successful just in so far as they have embodied in their writings the deep feelings and experiences of their own lives." He says that most of the poetry written by the blind lacks the "true ring." To him Helen Keller on the "wireless" would be mere words, "a rehash of what someone had spelled into her hand from some account from a popular writer."

> This is the error of not educating the blind child into his own world of experience so that he may live in harmony with himself and his world, whether it be among the blind or among the seeing. No school for the blind has ever achieved this as yet but a few blind individuals have partially achieved it for themselves.11

Chevigny agrees with Cutsforth on where the blame for verbalism must be placed.

> For too many teachers the prime job of the schools is to supply the child with what he has never seen rather than to direct his particular organization to increased coordination of his neuromuscular structure. The child becomes schooled in verbalisms, words which convey concepts to which he can attach no experiential relations, to the exclusion of self-development.12

9Ibid., p. 61.

10French, R. S., The Education of the Blind, pp. 79-80.

11Cutsforth, op. cit., p. 70.

12Chevigny, H., and Braverman, S., The Adjustment of the Blind, p. 143.

Pierre Villey alzo observes the verbalism in the blind: "words and emotions are used without troubling about the sensations themselves, giving the idea of the existence of sensations which do not exist."[13] He complains that imitation and psittacism (the desire to write and talk as if seeing) cause deplorable effects in the writings of blind poets. "The lack of inspiration is only too often manifest by a crowd of visual epithets which ring false."14 Tilley also mentions social imitation as an explanation for the overuse of visual words. "Sometimes the blind man contents himself with repeating words he hears, but these words do not correspond with any precise image within the limited fields of his experience. Cutsforth agrees, though not approvingly, that verbalism may have social approval as a purpose. "It is an attempt to represent things as nearly as possible as they would appear to others in their social situations."16 Villey suggests "if they speak of their wool as red, black or white, it is because they are adopting the language of those who are with them in order to be understood by them."[17]

However, Gutsforth also asserts, "verbalism in the blind is not as some writers hold, a sort of social compensation, an unconscious attempt to assert equality." He does not suggest an alternate reason and the evidence he has partly proves a point against the statement. In fact,

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13Villey, p., The World of the Blind, pp. 316-317.

14Ibid., p. 334.

15Ibid., p. 258.

16Cutsforth, op. cit., p. 5l.

17 Villey, op. cit., p. 74.

18Cutsforth, op. cit., p. 49.

the title of one of the sections in his book, "Hypocrisy in Verbalism"[19] does not seem to agree with the statement. Nevertheless, the term "hypocrisy" may be used by him only to refer to the use of words that have no meanings to the user. On this point of whether or not the blind have meanings for the words, however, there is quite a bit of confusion among the writers. Villey first claims the visual words have no meaning for the blind.

> The language he speaks is a language made by those who see for those who see. Names are given to hundreds of objects about which he can never get an exact idea.[20] To the eye alone belongs boundless horizons, endless plains, mountains rising one above another.[21] The born blind miss color, light, physical beauty and perspective.[22]

Diderot felt, "thus, a blind man should find greater difficulty in learning to speak because there is a much larger number of imperceptible objects in his world, and thus his field for comparing and combining is much more limited." He asks, "How, for example, can he rightly use the word 'expression' of countenance?".[23]

At this point, however, Cutsforth and Villey seem to make a turn-about. Cutsforth says,[24] "it must not be supposed, however, that the passage is meaningless to the writer." He continues;

> The visual words connote emotion or attitude rather than objective experience. To the writer the paragraph represents a set of ideas entirely different from the objective reality expressed in the sentences which represent as nearly as possible what the experience would be to those who both see and hear.

19Ibid., p. 51. 22Idib., p. 19.

20Villey, op. cit., p. 258. 23Dideroy op. cit., p. 80.

23-Ibid., pp. 293-294. 24Cutsforth, op. cit., p. 52.

Villey also claims similar meanings for the blind which are different from the meanings for the sighted.

> The terms red, light, white -which only have a visual meaning are not for him mere sounds. Gradually, thanks to experience and t0 plenty of reading, associations of ideas have formed themselves around these terms, and finally put something into them. If you speak, in the presence of a blind man, of a light coloured dress, eren without any context, the impression produced in him is not at all the same.as that which the words "a black dress" would produce.25

This turnaboutface in Villey is clearly noted in his reactions to Helen Keller who, in his words, "is to a singular degree in a person of such intelligence, constantly the dupe of words, or rather the dupe of her dreams. Wordiness, unreal emotion and in the worst sense of the term literature occupy a disconcerting place in her writings."26 On the other hand, however, he says:

> For Helen Keller, words have been not only what they are for a normal individual, the sign of sensation, always associated with it and evoking it by sheer habit, but literally the substitute for sensation. Words have taken the place of the absent, the unknown sensation.27

> By constantly hearing that grapes turned brown, Helen Keller associated with the expression "turning brown" all the savour of the grape when it has reached its highest degree of ripeness. She finds in that term all that she has placed in it of sensations of smell, taste and touch, all that she has also put into it of sentiment.28

This brings up another debate among the writers about the quality and type of conception the blind can acquire.[29] Reid, quoted by La

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25Villey, op., cit., p. 346. 27Ibid., pp. 314-315.

26Ibid., p. 313. 28Ibid., p. 346.

29La Sizeranne, M. de, The Blind as Seen Through Blind Eyes, p. 25 (citing Research on the Human Understanding by Reid).

Sizeranne, says "compare the appearance which the object presents to the eye with the description given of it. I believe that a man born blind may have a very distinct idea, if not of the thing itself, at least of something that closely resembles it." He continues, "while a man born blind may not know himself that light exists, he has yet within his own head stars without numbers."

Reid has an almost philosophical explanation for this. "Visible appearances of objects are taken as indicators, and the mind passes rapidly to the thing signified, without giving the least attention to the sign itself."30 "It will be seen," continues Reid, "the blind are deprived of nothing but a perception of the signs, and that every idea is fully accessible to the intelligence."31 According to La Sizeranne, himself blinded at the age of nine, "what faculties or functions are added to him by the sense of sight?" He answers, "a conception of colors, of perspective and certain physical beauties; and that is all."32

However, that does not seem to be all. The loss of color and loss of perspective have brought up a considerable discussion about the concepts of space the blind can have. Diderot wondered about these concepts after his brief encounter with Mademoiselle Melanie de Salignac, blind almost from birth. She could figure out how a cube would be divided if lines were drawn to the angles from a point within the center of the cube. Diderot wondered how she could have perceived the cube without the help of color or ground. [33]

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30 Ibid., p. 26. 31Ibid., p. 27.

32Ia Sizeranne, M. de, The Blind as Seen Through Blind Eyes, p. 29.

33Diderot, op. cit., p. 153.

Diderot felt that those born blind conceived of everything with reference to touch. The blind man of Puisseaux defined "mirror" by saying that it was "an instrument which sets things in relief at a distance from themselves when properly placed with regard to it."34

Villey disagrees. "The image which the blind man receives by touch rids itself easily of the characteristics which constitute the modalities peculiar to tactile sensation, and it differs greatly from these."35 He believes that the blind have what he styles "tactile sight" and has at his service "spatial synthetic images, images that are very supple and mobile."36

Talking of the powers of touch, Villey notes, "touch is near sight minus the sensation color, and with the sensation of rugosity added. The two senses give us knowledge of the same order."37

> The blind are constantly feeling, asking, "not only for masses of knowledge which the eye gives more easily and more surely than others, but they also ask for information which it would seem as though the eye alone could supply. It is by the warmth of the globe that the blind will judge whether the electricity has been lighted.38

Of spatial relationships, Villey asserts that "sight and touch speak the same language to the consciousness that listens to both of them and that the man who sees and the blind man understand each other really and not apparently, when they communicate their ideas to each other by means of the words of space, dimensions, distance and form."39

34Ibid., p. 71.

35Villey, op. cit., p. 183.

36Ibid., p. 190.

37Ibid., p. 18.

38Ibid., p. 87.

36Ibid., p. 206.

Psychologist Revesz does not agree with this. In fact, according to him "haptic space"--space that is perceived nonvisually or by the sense of touch--is different from the space perceived visually, "The very fact that space as perceived by the blind completely lacks perspective, renders any approximations to our spatial concept most problematic."[40] He adds, "leaving out all that we owe to our sense of vision, such as color, light, shade, diversity of form, perspective and vista our perception of nature shrinks to a miserable residue.*[41] The research of Revesz pertaining to presentation of sculptures to blind people proved that the blind were unable to enjoy spatial relationships aesthetically.

Philip Worchel[43] made a study of space perception and orientation in the blind. He compared 33 totally blind children and 33 matched sighted children. Both groups were securely blindfolded during the tests. The sighted and the accidentally blinded performed superiorly in general to the congenitally blind. Interestingly, the blind were significantly poorer than the sighted in space orientation because they utilized visual images* Worchel concluded that the superior performance of the sighted was probably due to the transactions of successive tactile impressions into a visual image of the total form.

However, Chevigny believes that the blind can learn and have succeeded in learning to abstract in terms of space and depth. This

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40Revesz.G., Psychology and Art of the Blind, p. 160.

41Ibid., p. 141. 42Ibid., p. 186.

43Worchel, P., "Space Perception and Orientation in the Blind," Psychological Monographs, No. 15, 65:l4-26, 1951.

44Chevigny and Braverman, op. cit., p. 141

he attributes to an organization, different from that of the seeing, in the congenitally blind. He agrees with Cutsforth who claims that the blind child does not have a six-cylinder engine with one missing; but has a five-cylinder engine.45

At this point, mention must be made of other forms of conceptualization of visual concepts. Many writers discuss in considerable detail the memory of visual imagery that persists in the adventitiously blind. This helps them to visualize experiences. The extent and vividness of this visualization proves interesting study; but it is beyond the scope of this study, because it concerns the blinded and not the congenitally blind.

Chevigny also quotes a German psychiatric publication in which it was surmised that the power of visualization claimed by the blind may be "pseudohallucination," a form of Anosognosis.46 Chevigny, however, contests this. "How there can be visual hallucination, pseudo or genuine, without the power of visualization is not clear."47

There is another form of visualization, Synesthesia. Cutsforth mentions this with reference to reactions of the blind to the voice of any person. "To those who employ concrete visual imagery and synesthetic photisms, the voice will immediately structurize into visual imagery of the new person."48 According to English and English, Synesthesia is

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445Cutsforth, op. cit., p. 50.

46A term coined by a German scientist to indicate a "pseudohallucination" which prompts those who have had a leg amputated to continue thinking they still have the leg.

47Chevigny and Braverman, op. cit., p. 143.

48Cutsforth, op. cit., p. 105.

"a condition, found in some individuals, in which perception of a certain type of object is regularly linked with particular images from another sensory mode.*49 This indicates a possibility of a visual concept when another sense is stimulated. Wheeler made two studies, both using Cutsforth as a subject.50 Cutsforth was blinded at the age of eleven years. Wheeler, in an excellent review of studies on Synesthesia, mentions many other studies concerning the blind. All these were related to blinded people. His own study showed that the photisms for many objects were mixed with visual associations of the objects. Some scientists feel that these processes may be more associative than synesthetic.51 It does not seem necessary to go into synesthesia in any more detail in this study because it also, apparently, has to refer to the blinded who have had visual experiences to associate with the new sense experiences.

As Chevigny notes, "if there is a true, separate psychology of the blind, it can be only for the congenitally blind."52 He explains;

> It is not known whether it is orientated primarily to tactual or auditory impression, or whether there may be a coalescence of the impressions received through all modalities into something that corresponds to visualization for the sighted. One knows only that the congenitally blind can and do function efficiently and form concepts of space and distance beyond the limitations of touch.

49English, H. B. and English, E. C, A Comprehensive Dictionary of Psychological Terms, p. 540.

50Wheeler, R. H., The Synaesthesia of a Blind Subject, pp. 3-61; Wheeler, R. H. and Cutsforth, T. P., The Synaesthesia of a Blind Subject with Comparative Data from an Asynaesthetic Blind Subject, pp. 1-104

51Chevigny and Braverman, op. cit., p. 133.

52Ibid., p. 22.

It has been seen that the last statement is questioned by the studies of Revesz and Worchel. This leaves Chevigny with a statement of things not known about the blind. Kathryn Maxfield adds to these. "It would be interesting to discover, if we could, whether pre-school children pick up from the seeing people around them visual terms which can have no meaning for them."53 She goes on to ask:

> If this is true, are these terms treated by the child as part of a name, as for instance "little red hen," or are they used indiscriminately? Do the pre-school children who have had sight for a few years continue using color and other visual terms after they have lost their sight? Also it would be interesting to know whether small blind children make use of other sensory terms as descriptive substitutes for those which would be used by the different children with sight?54

Kathryn Maxfield sought answers to these questions as a part of a longitudinal study she helped initiate at the Arthur Sunshine Home and Nursery School for the Blind which existed only for four years. The one report on the study was her report of the pilot study. It used seven children who were all totally blind with some light perception in four of them. The study was made as an analysis of small segments of free conversation. The analysis of the sensory terms used was only a part of the study which dealt with the spoken language of pre-school blind children. Maxfield found that the three younger children—average age 40 months—had 0.2 per cent visual words. One child used one term. The older children—average age 68 months—had 0.8 per cent visual terms.

53Maxfield, K. E., "The Spoken language of the Pre-school Blind Child," Archives of Psychology 201:67, May, 1936.

54Ibid., p. 68.

The one term used by the young child was "brown" when the child asked for a brown doggie. Maxfield, who does not think the child (42 months) would have known the color brown by name even if he had seen, feels that this word was used as a part of a name. Of the older children, a boy who had never seen used two visual terms. Of this Maxfield says:

> The terms consisted of the word "pink" which he used in speaking about "nice pink cheeks." Obviously, it is the adult phrase which carries meaning for him rather than the single word "pink." (It would be interesting to know whether or not this phrase stands in his mind for cold, tingling cheeks.)55 (Author's parenthesis)

One girl used "saw" three times in "what seemed to be definitely visual ways." Maxfield adds, "Barnard's use of the word 'pink' and Kim's use of the word 'brown' show how easy it is for blind children to acquire visual terms. Whatever may be true of older blind people, in children of this age such visual terms seem to be useful parts of larger concepts."56

She mentions in this context a generalization of meaning. "So often, people with sight employ the verb 'to see' in the general sense of 'consider' or 'examine' that the blind have almost universally adopted this generalized use and have even specialized it to mean 'feel' or 'examine with your hands'."57 Her study also listed the terms belonging to other sensory modes, but did not break them down further.

Cutsforth also did an experiment in verbalism. Twenty-six congenitally blind children were given a "simple test." Forty objects varying in their degree of sensory availability were presented and each child was to "repeat the first quality he thought of when he heard the name of a

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55Ibid., p, 68.

56Ibid., p. 70.

57Ibid., p. 68.

given object."58 He found that nearly half the responses were visual. Sometimes when there were double responses—one visual and one tactual—the children were given a choice of one of the responses and generally the nonvisual response was picked. His data broke down in the following way:

50 per cent visual
33 per cent tactile
7 per cent taste and smell
3 per cent auditory
and the rest abstract

The least percentage of visual response was 12.5 per cent and the greatest percentage of visual responses was 95. "The instructions and practice words were so arranged that they suggested to the child the use of non-visual words."[59]

Cutsforth concluded that the high percentage of visual answers showed "a very strong tendency to employ visual concepts when other sensory concepts are just as available and much more meaningful and familiar in reference" and that the pupils "prefer risking a doubtful visual response rather than choosing a familiar sensory attribute that they know from experience."60 While these results are not serious in themselves Cutsforth thinks they are symptomatic of something serious that has happened. "Intellectually the child is organized without reference either to himself or his experiential background."61

It is seen from the previous review that there are not too many systematic studies in this area of visualization in the blind. Many books are written about the blind and many of these deal mainly with the

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58Cutsforth, op. cit., p. 66.
59Ibid., p. 66.
60Ibid., p. 68.
6lIbid., p. 69.

history of education of the blind and educational policies and practices. Some deal with theories about the blind and what should be done for them. The theories seem to conflict with each other not only between different authors but also between different contexts of the same author.

After such a review as this one only knows that the blind do use what are usually visual words. The reason for the use of visual words is either social approval or a result of poor habits encouraged in the school systems that value highly a "literary tradition." It is not known with certainty whether the words have meaning for the blind and whether the meanings, if any, are the same for the blind as they are for the sighted. In other words, one does not know if the words are visual for the blind or if they use the words under different connotations.

Two of the studies mentioned—Revesz and Worchel—were on space perception and orientation in the blind and the other two were on language. The latter were by Cutsforth and Maxfield.

It was not stated whether Cutsforth's children had any sight at all, though the statement that for them visual qualities were only hearsay, implies that they were totally blind. Maxfield's children varied in their onset of blindness and four of the eight had light perception. The sample language obtained by both the studies was small. Cutsforth's study was done in the late twenties or the early thirties while Maxfield's study was done in the middle thirties in this century.

Neither of the studies compared the visual terms in the language of the blind with those in the language of the sighted. It seems impossible to answer the questions about whether or not pre-school blind children pick up from their seeing peers visual terms which have no

meaning for the blind children and whether the visual words used by the blind are just parts of names, questions raised by Maxfield, without making a comparison of the visual words used by the blind with those used by the sighted. These answers may be found if one could accurately define a "visual word" and be able to distinguish it from not only words belonging to the other senses but also from words that are generally visual but have different meanings for the blind.

Some writers did suggest that the blind form their own meanings for many words that are usually visual. Diderot showed this 200 years ago. The blind man from Puisseaux defined a mirror as showing figures in relief. To that man, then, the word "mirror" was not visual but tactile. Berthold Lowenfeld says that "it is impossible for the blind to understand what visual experiences really mean, just as it is for the seeing to understand what it means to be completely blind." However, he quotes Theodore Heller 63 who said with references to ideas about color:

> They acquire substitutive ideas for color because they live in a seeing world which makes constant use of color observations and color references. Those ideas are based on verbal, sensory and emotional associations. These substitutive color ideas exist not only as components of the blind person's world of imagery, but also as a part of his vocabulary needed to communicate with the seeing world in common terms.

This creates a problem in the use of the term "visual words." If words are not used with a visual context, they cannot be visual words

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62Lowenfeld, B., "Psychological Foundations of Special Methods in Teaching Blind Children," in Blindness, p. 91.

63Ibid., p. 93, (citing Studien Zur Blindenpsychologie by Theodore Heller, Wilhelm Engelman, Leipsig).

even though the word itself were usually visual. The same problem arises with words like "see" and "look." As Kathryn Maxfield pointed out, these words have been universally accepted by the blind to mean a specialized meaning. This brings up a need for a distinction to be made between words that are really visual and those that are apparently visual but do not have visual connotations for the blind.

There is also the problem of visual words that are "useful parts of larger concepts." Visual words used as parts of names can be mentioned as an example of a situation where this occurs. Maxfield referred to these. "Watch TV," is one of many examples. The whole phrase goes together and perhaps to an extent the two words are inseparable in that context. There really does not seem to be a substitute word for "watch" in that phrase that will not hurt the phrase. The term "see you later" does imply the act of seeing but the whole phrase has an idea for a meaning and does not really limit itself to its meaning as a simple sentence. In other words, it is a greeting with a meaning, not necessarily the same as is given by the words. In cases like this, the visual term is no longer a visual word, but only an integral part of the language pattern.

It seems necessary that one must make these distinctions if one needs to find out if the blind do use visual terms. More research needs to be done in the area of visual words used by the blind and that of visualization of events in the blind. A repetition of the studies done by Cutsforth and Maxfield is indicated both by the time that has elapsed since their studies and by the fact that they did not allow for the problems mentioned. The present study is an attempt at a modified version of the two studies.

CHAPTER III

MATERIALS AND PROCEDURE

This is a study of two groups of twelve subjects each to whom a schedule loaded for visual answers was presented. One group was blind and the other group sighted. The answers to the schedule were tape-recorded for later analysis.

Subjects

The blind children came from the Kentucky State School for the Blind, which is a residential school for the blind situated in Louisville, Kentucky. The children were selected from among those enrolled in the school using the following criteria. All the children were:

1. Totally blind without even light perception,
2. Cogenitally blind.
3. Of normal or above normal intelligence as indicated by the verbal scores of above 80 on the WISC.

The first two conditions were used to insure against any visual experience that might provide visual associations and thus affect the present study. It was felt also that when the possibility of any visual memory was voided the researcher could be assured that any visual reference was baseless in that the initial visual experience can be completely ruled out. The third criterion was used to avoid the hampering of verbal output due to a mental deficiency.

Five boys and seven girls ranging between eight years and seventeen years of age and grade one through seven were in each group. Their verbal

scores on WISC tests given by psychologists authorized by the school, ranged between 82 and 137.

The sighted children were selected from schools in Bloomington, Indiana, and South Bend, Indiana. The sighted children were matched individually with the blind subjects in terms of age, sex, race, grade level and scores on the verbal scale of the WISC, While socio-economic matching might have proved useful, it was not found practical for the purposes of this study. The rationale for matching was mainly to equate as much as possible language acquisition and language ability.

The sighted children were selected from those given the WISC in the two school systems. The psychological tests were given by competent psychologists. Some of the children had been referred to psychology clinics and reading clinics for some purpose or the other. A child was not considered when he or she had severe emotional or reading problems, as indicated by their Personal Data Sheets, which might have affected oral language ability. Hence, it is believed the fact that some of these children came from clinic files does not affect the study.

Table 1 shows the blind and the sighted subjects and the matched elements. The blind children are listed in ascending order of ages, youngest one first. The letter names were given for convenience and they will be kept constant throughout the present study. The capital letter-names are given to the blind children and the lower case letters stand for the sighted children. Each sighted child has the same letter-name as his matched blind counterpart.

TABLE 1. THE TWO GROUPS WITH THE MATCHING DATA

Blind						Sighted					
Child	Age in years	Sex	Race	Grade level	IQ in verbal scores	Child	Age in years	Sex	Race	Grade level	IQ in verbal scores
A	8	F	W	1st	89	a	8	F	W	1st	81
B	8	F	W	2nd	103	b	8	F	W	2nd	106
C	9	F	W	2nd	86	c	9	F	W	2nd	86
D	9	F	W	4th	133	d	9	F	W	4th	124
E	9	M	W	4th	98	e	9	M	W	4th	99
F	10	F	W	3rd	85	f	10	F	W	3rd	82
G	10	M	W	3rd	88	g	10	M	W	3rd	83
H	11	M	W	5th	116	h	11	M	W	5th	109
I	11	M	W	5th	82	i	11	M	W	5th	92
J	14	M	W	9th	177	j	14	M	W	9th	125
K	17	F	W	9th	95	k	17	F	W	9th	104
L	17	F	W	11th	106	l	17	F	W	11th	113

Construction of Schedule

The schedule was constructed with the main purpose of eliciting as many visual answers as possible. It was loaded with questions that would bring out many visual words and concepts. It also contained visual words that were to be classified or defined. This part of the schedule, apart from encouraging the use of visual terms, would point to how concepts of visual experiences are acquired and retained by the blind. If more words are classified as nonvisual than as visual by the blind, them one could assume that the blind do not think of words on visual terms. Questions and words which did not necessarily elicit visual answers were randomly interspersed so as to distract from the emphasis on the visual concepts.

The questions were in five sections and were about activities, places, seasons, people, and animals and things. The order of the questions was chosen as the best way to build up a rapport and facilitate answering. Questions on games and activities about which children have little hesitation to talk were asked first and questions about people which could bring up emotional undertones came in the latter part of the schedule.

The word games were interspersed in the questions so as to add variety to the schedule. The word games were in three groups--comparisons, classifications, and definitions.

The word comparisons consisted of pairs of worda. The pairs of words were similar in visual terms and dissimilar in nonvisual terms or vice versa. The verdict of similar or dissimilar would then give indications of the presence and use of visual concepts and terminology. For example, "rose" and "blood" are similar in color-visual and the similarity ends there for all but perhaps poetic purposes.

Some pairs of words had similarities or dissimilarities both on visual terms and on nonvisual terms. For example, elephant and building are similar in size (visual) and dissimilar in type. This is one of the reasons for asking for an explanation of the verdict. (The other reason, again, is to encourage more verbalization). The explanation would indicate what concepts were used in the forming of the decision.

The word classification was used in the study for similar purposes. A word was given and the subject had to classify the word into the sense that it "belonged to." "Belong to" was to mean that the mention of the word brought up concepts or memories of a particular sense more often

than of others. It also indicated that the sense chosen was the most affected by the particular object because the object would be moat frequently perceived by that sense. These words were such that each one belonged to more than one category of senses and the common one for all the words was the visual. Some words were obviously more visual and some much less so. The purpose was to see which one the blind picked predominantly and which one the sighted picked most predominantly.

The word definition was a little cruder than either of the above. It bluntly asked the blind to define visual terms and some nonvisual terms. They also had to use them in sentences of their own. This section was also to furnish some guides to the formation of visual concepts in the blind.

A written part was added to the questionnaire. This was optional and many children did not write anything at all and some wrote no more than a sentence. This was intended as an attempt at a minor comparison of the spoken language and the written. A complete analysis of written language was beyond the scope of the study in terms of the time needed to collect enough data to make a valid study and also in terms of controlling the written situation. Hence it was not made compulsory.

Schedule

I. Activities

1, What games do you like? Why?
2. Is there any game that you do not play that you like? Why?
3° What do you do when you ride with someone?
4. How do you like to travel—by car, train, ship, or plane? Why?

II. Places

1. Tell me about your school.
2. Tell me about your room where you live.
3. Tell me about a baseball park. How do you know about it?
4. Tell me about the woods,
5. Tell me about a trip you took.
6. Which is your favorite city? Why?

III. Comparisons—Which of the pairs are similar and which dissimilar? Explain your answer.

1. moon-milk
2. blood-rose
3. football-book
4. talk-fly
5. mountain-ocean
6. elephant-building
7. crayon-chalk
8. table-door
9. dance-concert
10. car-train
11. flame-steam
12. church-cat
13. pencil-cup
14. bread-lamp
15. flowers-painting
16. T.V.-radio
17. snake-tiger

IV, Seasons

1. What season do you like best? Why?

2. What holiday do you like best? Why?

7. Objects and Animals

1. Tell me about your pets.
2. What animal do you like best? Why?
3. What animal are you most afraid of? Why?
4. What kind of clothes do you like best? Why?
5. What do you like to do when you are by yourself?
6. Tell me about a concert you went to.
7. Tell me about a movie you went to.

VI. Classification

These words are related to one of the five senses—vision, hearing, taste, smell and feel (tactile). When I say the word tell me the sense to which the word is related.

1. typewriter
2. fire

3. clock
4. bell
5. radio
6. fire engine
7. music
8. gun
9. steam
10. car
11. jacket

VII. People

1. Tell me about your boy/girlfriend?
2. When you meet people what do you like/notice about them?
3. Tell me about your father and mother.
4. Tell me about your teacher/teachers.
5. Who is your favorite person? Why?
6. Who is your favorite actor? Why?
7. Who is your favorite singer? Why?
8. What, in general, are you most afraid of?

VIII. Definitions

You can define these words. You can tell me what they mean. You can also use them in your sentence.

1. Coffee
2. Lawn
3. Hot
4. light
5. Sweet
6. Dark
7. Blood.
8. Snake
9. Pretty
10. Map
11. Sun
12. Water
13. Blue
14. Clown
15. Mirror
16. look
17. Cat
18. Warm
19. Shadows
20. Sneeze
21. Mouse
22. Candy
23. Rainbow
24. Soap
25. Fire

IX. Weitten

Will you please write whatever you want to about two of these.

1. Santa Clause
2. Spring
3. Circus
4. My first snow
5. A Birthday Party
6. My City
7. The place where I work
8. My Bank

Procedure

The questions on the schedule were selected by the present investigator from among many that were given to a group of adults and children. The selected questions elicited more visual responses more frequently than the others in the pilot studies. The decisions of what constituted visual terms were made arbitrarily by the investigator. A check with a corater who was a graduate student in the area of Speech Pathology on parts of the pilot study showed one hundred per cent agreement between the present investigator and the corater.

Some questions that did elicit many visual words were not selected for the schedule in order to avoid an overlapping of questions with respect to content type. For example, questions about brothers and sisters were not asked because they related to family relationships and would have overlapped the question concerning parents.

The words used in the schedule's word games were chosen in the same manner from a large set of words. These words and pairs of words were classified by a number of sophisticated people belonging to the various sense categories. The words selected for definition and comparison

were the ones most frequently chosen as visual. Some that were chosen as least visual were selected as distractors.

The words for classification were chosen in like manner. Words from the above list that posed problems for the judges in terms of classification into any one category were selected. Some of the words included in the original large list were taken from a list of words used by Diehl and England in their studies of Mental Imagery.[1] The words finally selected for the schedule belonged to more than one sense modality and one of the common modalities always was the visual. In other words, every word in the list could be classified visual and one or more of the other modalities. This was so arranged to see if the sighted would classify more words more frequently as visual than would the blind. There were two distractor words: music and radio.

Once tne questions were selected tney were set up in related groups. This was to enable a gradual procession through the questions. Questions relating to people were put together and those to activities formed another group. An attempt was made such that questions would follow in a logical sequence. The questions of preference in modes of travel for example, follows a question involving travel.

The comparison pairs, the classification words and the definition words were arranged in random order. Random tables[2] were used for this purpose.

1Diehl, C. F. and England, N. C, "Mental Imagery," Journal of Speech and Hearing Research 1:268-274, September, 1958.

2Rand Corporation, A Million Random Digits with 100,000 Normal Deviates.

Interview

Children were seated across the table on which were placed a tape recorder and a microphone. All but one child were interviewed in their schools. Rapport was established by talking about the child and about the tape recorder. None of the children posed any problem in this area. Even the one boy who cried when he was called out of his classroom because he feared a "shot" was very cooperative throughout the questioning. The following instructions were given. The instructions were not read but were spoken in casual terms because it was believed that the introduction of undue formality into the procedure was not very conducive to free verbalization. The instructions, however, were uniform in content and to the following effect:

"I have some questions here that I would like you to answer. These are questions that have no one right answer. Anything you say is the right answer. You can not help making a hundred on it. There is nothing for you to worry about* All you have to do is to talk. O.K.?"

These instructions were explained in greater detail for the younger children and the older children were told that they might find some of the questions rather silly because the schedule was made up for children of all ages. Instructions on the schedule were also elaborated upon when it was found necessary. For example, the "classifications" part of the schedule posed problems to some of the cnildren. The children were given the names of the five senses. After tne senses were adequately identified the children were told that when they neard a word they had to select the sense to which the word "belonged to." The concept of "belong to** was explained by analogy and by an explanation of the use of a

particular sense in the perception of a particular object. In this manner the instructions also became a part of the rapport building procedure. The schedule was orally presented. The whole session was kept quite informal so as to encourage the most verbal output. This also proved successful.

"While the children answered the questions, additional probing questions were asked to encourage elaboration. At no time were questions directly leading to visual answers asked. In other words all the extra questions would only create opportunities for the use of visual terms and that only indirectly. This was slightly different in the case of the blind. They were asked "How do you know about that?" when visual terms were used. But care was taken such that this question was asked also at many random intervals so that no particular attention was to be drawn to the questioning of the visual terms. In order to make up for any undue reinforcement the sighted were also asked this question frequently.

When children seemed to have finished answering a question, they were asked if they had any more to add before the next question was asked. This served the double purpose of prodding them on for more and of seeing to it that they were not shut up before they had finished*

After the fifth section of the schedule was finished, the subjects were asked if they were tired. If they said they were, the tape was stopped. Some subjects listened to themselves on tape and some preferred just to talk while they rested. One child decided to come back the next day.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

A schedule was prepared such that it would elicit a large number of visual words in a considerable amount of running speech. This schedule was presented to two groups of twelve students, one totally and congenl-tally blind and the other sighted. The two groups were matched individual to individual with reference to age, sex, race, grade level and I.Q. as given by the verbal scares on the WISC. The schedule was individually presented and the responses of the children were tape-recorded and later transcribed for analysis. The study was a quantitative comparison between the number of visual words used by the blind in their language and the number of visual words used by the sighted in their language.

An actual word-count was made to get the total number of words used by the two groups. A "word" was taken, for the purposes of this study, to mean a semantic unit. Names of people, places, and things were always counted as one word each even though the name itself some-times contained more than one word. For example, "New York," "hide and go seek," "Mary Lou,* "dish-colored blonde," and "New More Friends and Neighbors" were each counted as one word.

The visual words and the apparently visual words were counted. The decision of whether or not a word was visual was made arbitrarily by the present investigator. However, a check by a corater on the pilot study and another check by a corater on parts of the final data showed one hundred per cent agreement between the corater and the investigator on both the occasions. Both the coraters were graduate students in the department of Speech and Theater at Indiana University. This agreement

with the coraters added to the fact that the investigator checked the data for both the compared groups, thus equalizing the probability of error for both the groups, made the use of a corater throughout the study unnecessary.

After the visual words were counted, the apparently visual words were deleted from the number of visual words. The following words under the specified connotations were considered apparently visual.

See: think, understand, listen, (e.g., let me see, I see what you mean, see, as I said)

Pretty: rather, (pretty good)

Look: search, feel, (look for it in the box, look at the cat by touching)

Some visual words used in figures of speech were not counted as visual, for example, rain or shine. Sometimes when a visual word was explained, without any prodding by the investigator in terms of nonvisual terms, that word was considered apparently visual. For example, in the phrase "shade where it is cooler" shade was considered to be only apparently visual.

A percentage score was obtained for the number of visual words spoken by each child. Table 2 shows the total number of words spoken, the number of visual words spoken and a percentage score for each child in both the groups. The alphabetical names for the children, upper case for the blind and the lower case for the sighted, are the same as they were in Table 1 and will remain consistently so throughout this chapter. In other words, "A" stands for the same blind boy throughout this study and "a" refers to the sighted boy who is the matched counterpart of "A".

TABLE 2. NUMBER OF WORDS AND PERCENTAGE OF VISUAL WORDS SPOKEN BY THE TWO GROUPS

Blind					Sighted			
Child	Age	Number of words	Visual words	Percentage	Words	Visual words	Percentage	Child
A	8	1,713	19	1.11	1,443	38	2.63	a
B	8	1,663	24	1.44	4,189	94	2.24	b
C	9	2,178	21	0.96	1,716	35	2.04	c
D	9	3,216	38	1.18	1,963	50	2.55	d
E	9	1,967	34	1.73	2,254	47	2.08	e
F	10	1,446	28	1.94	3,258	60	1.84	f
G	10	1,450	25	1.72	1,985	42	2.12	g
H	11	1,117	14	1.25	2,040	57	2.79	h
I	11	1,279	23	1.79	3,148	81	2.57	i
J	14	5,027	51	1.01	1,641	57	3.47	j
K	17	2,441	28	1.15	2,358	52	2.21	k
L	17	2,645	28	1.06	2,819	73	2.59	l
Total		26,142	333	1.27	28,814	686	2.38	

The blind spoke 26,142 words in all and 333 of these were visual words or 1.27 per cent of their words were visual words. This average is higher than either of the two groups of Maxfield and lower than the group of Cutsforth.

The sighted group spoke 28,814 words or 2,672 words more than the blind. Of these, 686 were visual words* This made an average of 2.38 per cent visual words.

The sighted used more than twice as many visual words as the blind and only one-tenth more total words. On the average the sighted used 1.8 times the visual words as the blind did.

The t test was applied to see if the difference between the sight

3-Maxfield, 0.2 per cent and 0.8 per cent; Cutsforth, 50 per cent

group and the blind group was statistically significant. The following formula was used:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{\Sigma x_1^2}{n(n-1)} + \frac{\Sigma x_2^2}{n(n-1)}}}$$

The t score was equal to 6.7 which was significant at the one per cent level with 11 degrees of freedom. This meant that the sighted used very significantly more visual words than the blind. This supported the hypothesis of the present investigator in that the blind did not use more visual words than the sighted; they did not even use as many visual words as the sighted. In fact, the sighted used significantly more visual words than the blind.

Table 3 shows the same data as the above for the blind with the personal data for each child.

TABLE 3. PERSONAL DATA AND WORD SCORES FOR THE BLIND

Child	Age	Sex	Grade	I.Q.	Total words	Visual words	Percentage	Place of residence*
A	8	F	1st	89	1,713	19	1.11	D
B	8	F	2nd	103	1,663	24	1.44	R
C	9	F	2nd	86	2,178	21	0.96	R
D	9	F	4th	133	3,216	38	1.18	D
E	9	M	4th	98	1,967	34	1.73	D
F	10	F	3rd	85	1,446	28	1.94	D
G	10	M	3rd	88	1,450	25	1.72	R
H	11	M	5th	116	1,117	14	1.25	R
I	11	M	5th	82	1,279	23	1.79	D
J	14	M	9th	137	5,027	51	1.01	R
K	17	F	9th	95	2,441	28	1.15	D
L	17	F	11th	106	2,645	28	1.06	R
Total					26,142	336	1.27	

*D = home; R = school.

TABLE 4. LIST OF VISUAL WORDS USED AND THEIR FREQUENCIES

Words	B	S
See	88	120
Look	44	59
Color	20	50
Shines	20	11
Light	18	23
Big	14	45
Beautiful	11	10
Pretty	11	13
Watch	11	33
Picture	9	15
Red	9	32
Bright	8	9
Up in the sky	7	10
Dark	6	19
Sun	6	8
Green	4	9
Reflection	4	11
Night	3	4
Paints	3	7
Cloudy	2	1
Cute	2	4
Dim	2	1
Dress up	2	8
Little	2	5
Show	2	8
Stars	2	0
Yellow	2	6
Bloom	1	1
Blue	1	16
Blurry	1	0
Deadringer	1	0
Figure	1	2
Flash	1	1
Glance	1	1
Grey	1	0
Hazel	1	0
Hide	1	3
Landscape	1	0
Lightning	1	0
Makeup	1	3
Shadow	1	3
Shaggy	1	0
Sights	1	0
Tall	1	7
Ugly	1	2
Slant	1	0
White	1	17
Wide	1	2
Total	333	579
Brown	0	10
Black		7
Pink		6
Long		4
Crawl		3
Glance		3
Flowers		3
Glasses		3
Handsome		3
Notice		3
Skinny		3
Suntan		3
Upside down		3
Dirty		2
Draw		2
Gorgeous		2
Image		2
Indicate		2
Pigment		2
Mud		2
Scenery		2
Short		2
Slithery		2
Small		2
Stylish		2
Bare		1
Blonde		1
Blindness		1
Brick		1
Bunch of		1
Cast		1
Chalk		1
Cream		1
Creepy		1
Fat		1
Gold		1
Thin		1
High up		1
Lovely		1
Mask		1
Mess		1
Neat		1
Orange		1
Shade		1
Setting		1
Sign		1
Slimy		1
Smoke		1
Snow		1
Stripes		1
Triangle		1
Whole		1
Wiggle		1
Spots		1
Total		107

The table yields no pattern in the number of visual words with reference to age. A rank order correlation test was made to measure statistically the relationship between age and number of visual words.

$$P = 1 - \frac{6\Sigma D^2}{N\,(N^2-1)}$$

The correlation coefficient was -0.12 which is a very small negative correlation, This shows that there is almost no relationship between age and the percentage of visual words in total words,

This contradicts the hypothesis made by the investigator that age would affect the number of visual words used by the blind and that an increase in age would bring about an increase in the number of visual words. In fact, the very slight negative correlation indicates that if there is any relationship at all, it is the reverse of that hypothesized.

No pattern emerged for any of the other data used for matching. There is, however, one slight trend towards a relationship between the place of residence and the number of visual words. The day pupils or those who commute to school every day had the three highest percentage of visual words and the average for all six of the day pupils was 1.42 per cent while the other six, the residential students, had an average of 1.24 per cent. The difference is not statistically significant.

The list of visual words used by the two groups is given in Table 4. The table also gives the frequency with which each of the words was used both by the blind and by the sighted. The words are arranged in descending order of frequency of use for the blind. The latter portion of the table consists of words used only by the sighted.

The blind used 48 visual words. The total frequency of visual words was 333. The first ten words in the list made up 73.87 per cent of the total frequency of visual words for the blind. The first five make up about 57.05 per cent of the total frequency. This indicated that the blind children used the same few words rather frequently.

The first ten words for the blind were made up of four verbs, four adjectives and two nouns. Three of the first five words were verbs. In the 48 words there were 11 verbs, 12 nouns, 24 adjectives, and one adverb. The adjectives outnumbered the other types in variety; but they only formed 31.2 per cent of the total frequency. Table 5 shows how the visual words used by the blind broke down into the various categories of parts of speech.

TABLE 5. BREAKDOWN OF VISUAL WORDS USED BY THE BLIND BY PARTS OF SPEECH

Classification	Number	Frequency	Percentage
Verbs	11	174	52.3
Adjectives	24	104	31.2
Nouns	12	48	14.4
Adverbs	1	7	2.1
Total	48	333	

Among the 11 verbs the four major verbs were "see," "look," "watch," and "shines." These four made up a frequency of 163 or 48.95 per cent of the total visual words used.

It is interesting to note that "shines" was the only major visual word used by the blind much more frequently than by the sighted. "Beautiful" was used 11 times by the blind as against 10 by the sighted; but "shines" was used 20 times by the blind as compared to 11 times by the sighted. It must be mentioned, however, that many times "when the blind were questioned about how they knew something or the other was shining, they said they could feel the sun or feel the heat of a bulb. These were not dismissed as apparently visual words because prodding was necessary to bring out the nonvisual connotation.

The three major verbs "see," "look," and "watch" took on many generalized meanings. They were frequently used to denote actions that did not necessarily need vision. However, the intended meanings were not as definite as were mentioned for the "apparently visual" usage of these words. The following examples of uses of these verbs, where the nonvisual connotation perhaps existed, were taken from the data.

Variations of "see my grandmother" were quite frequent. When used thus 'see' meant 'visit'. The visual aspect of visiting is only a part of the total concept of visiting, "look" was explained as "feeling" and "careful study" by two blind children. When one child was asked what she meant by "I saw a statue," she explained that she had been permitted to touch the statue. This expression of tactual examination for "seeing" also was frequently elicited. The word "watch" to mean "take care of also was used. This indicated generalized connotations for the visual words.

The sighted used 92 visual words according to Table 4. The total

frequency of visual words was 686. The 10 visual words most frequently used by the sighted formed 60.35 per cent of the total frequency. This, when compared to the 73.8? per cent of the 10 visual words most frequently used by the blind, emphasizes the variety of visual words used by the sighted.

The first five words for the sighted made up only 44.75 Per cent of the total words. The first five for the blind made up about 57.05 per cent.

The first 10 visual words for the sighted were made up of three verbs, six adjectives, and one noun.

In the 92 visual words used by the sighted, there were 18 verbs, 46 adjectives, 25 nouns and three adverbs* The adjectives outnumbered the other parts of speech among the visual terms used by the sighted as they did with the blind. Table 6 shows the breakdown of visual words by parts of speech for both groups.

In the case of the sighted, unlike in that of the blind, the adjectives also made up the greatest fraction of the total frequency.

The 46 adjectives appeared at the rate of 45.4 per cent of the number of visual words. The 18 verbs represented only 38.9 per cent of the number of visual words. Just four of the major verbs used by the blind represented a greater percentage of the number of visual words used than did all the 18 verbs used by the sighted. Those four verbs constituted 48.95 per cent of the number of visual words used by the blind. It is interesting to note that the number of adjectives is half the total visual words used for both the groups. This does not refer to the frequency of their use. The blind had 24 adjectives in 48 visual words and the sighted had 46 adjectives in 92 visual words.

TABLE 6. BREAKDOWN OF VISUAL WORDS USED BY THE TWO GROUPS BY PARTS OF SPEECH

	Blind			Sighted		
Classification	Number	Frequency	Percentage	Number	Frequency	Percentage
Verbs	11	174	52.3	18	267	38.9
Adjectives	24	104	31.2	46	311	45.4
Nouns	12	48	14.4	25	94	13.7
Adverbs	1	7	2.1	3	14	2.3
Total	48	336		92	686	

In terms of frequency, however, the 46 adjectives used by the sighted constituted 445.4 per cent of the total number of 686 visual words, while the 24 adjectives used by the blind made up only 31.2 per cent of their total number of 336 visual words. This difference in the frequency of use of adjectives is not surprising because adjectives are descriptive and much of description entails visual qualities.

There were six adjectives in the 10 most frequently used visual words for the blind. These six adjectives accounted for 21.92 per cent of the total frequency of visual words. The top six adjectives for the sighted, on the other hand, accounted for 26.1 per cent of the visual words used by the sighted. This shows that the sighted tended more towards describing than did the blind. The sighted used a greater percentage of adjectives and the blind used a greater percentage of verbs. There was not much difference in the percentage of visual nouns and visual

adverbs that were used by the two groups.

Classifications

Eleven words were to be classified by each child and thus each of the groups had 132 classification decisions to make. Of the 132 made by the blind only eight visual classifications were made. This constitutes a percentage of 6.06. The sighted had 30 classifications under vision for a percentage of 21.52.

Table 7 shows the words that were classified under vision by each child in the two groups. The visual classifications are marked with a "V". The total number of visual classifications for each word (rows) and for each child (columns) are also given.

TABLE 7. VISUAL CLASSIFICATION MADE BY EACH CHILD AND OF EACH WORD

Words	Blind												Sighted												B	S
	A	B	C	D	E	F	G	H	I	J	K	L	a	b	c	d	e	f	g	h	i	j	k	l		
Typewriter					V	V							V								V				2	2
Fire						V				V						V	V			V				V	2	4
Clock				V					V								V			V		V	V		2	4
Bell																									0	0
Radio																									0	0
Fire engine													V			V			V			V		V	0	5
Music																									0	0
Gun																V	V		V			V	V		0	5
Steam											V	V	V			V									2	2
Car																	V			V	V	V	V		0	5
Jacket													V		V									V	0	3
Totals	0	0	0	0	1	1	2	0	0	1	1	1	4	0	1	4	4	0	2	3	2	4	3	3	8	30

Only four words were classified as visual by the blind, each one twice—typewriter, fire, clock, and steam.

Three words were not classified as visual by any in either group-bell, radio, and music. Radio and music were the distractor words inserted by the investigator; but bell was not intended as such.

The small number of visual classifications on the part of the blind indicates that the blind do not think of different objects in visual terms. It must be mentioned that two of the eight visual classifications made by the blind were not wholly visual, because on the two occasions the child clarified the visual classification by making a distinction between the sighted and the blind. One child, immediately after classifying the word "clock" as visual said that this was not so for the blind who had raised dials on their clocks. She added that for the blind "clock" would be tactile. Another child made a similar differentiation for "fire" and explained she chose the visual classification because she had the majority of the people, who would be sighted, in mind.

There were five blind children with no visual classification while there were two sighted children with no visual classification.

No statistical analysis was made on this part because the significance of the difference between the two groups is evident. The sighted made 21.52 per cent visual classifications as opposed to 6.06 per cent made by the blind. The sighted classified as visual 3.75 times the number of words classified as visual by the blind. This great difference can be accepted as being significant.

Comparisons

Table 8 shows the comparisons made by the two groups and indicates the visual comparisons. The table is organized similar to Table 7 and shows the pairs of words which were compared "visually by each child (letter names). The comparisons were rated visual or nonvisual not with reference to the words used but with reference to the concepts employed in the comparison. In other words, for a comparison to be rated as visual, the visual aspect of the difference or similarity had to be used for the comparison. Even if a visual word was used in a nonvisual concept, the concept was still considered nonvisual and the comparison for which such a concept was utilized was rated nonvisual. The visual word, however, was tallied for the analysis already reported.

Out of 204. comparisons the blind made 35 visual comparisons or l7.15 per cent visual comparisons. The largest number of visual comparisons made by the blind were for the pair "bread-lamp" where they even outscored the sighted, 7-6. Those that talked of the lamp did so with reference to light. One child mentioned the heat of the lamp when it was shining. The other comparison in which they outscored the sighted was between "TV" and "Radio," 4-3. In this instance three blind children explained that while the difference of a picture existed, the difference did not affect them. They knew of the difference, they said, because other people talked about what was going on and because they had felt the glass on a TV set. One child did not offer an explanation. In all the cases children repeatedly said, when asked how they knew of the visual aspect, that they had heard of the visual cues at home and had picked them up.

TABLE 8. VISUAL COMPARISONS MADE BY EACH CHILD AND BETWEEN EACH PAIR OF WORDS

	Blind												Sighted												
Pairs of words	A	B	C	D	E	F	G	H	I	J	K	L	a	b	c	d	e	f	g	h	i	j	k	l	Total
Moon-Milk	V	V					V		V				V	V	V	V		V	V	V					4- 7
Blood-Rose				V		V	V			V		V	V	V	V	V			V	V	V	V	V	V	5-10
Football-Book														V		V									0- 2
Talk-Fly																									0- 0
Mountains-Ocean		V			V		V							V			V						V	V	3- 4
Elephant-Building		V			V			V					V	V		V			V	V		V	V	V	3- 8
Crayon-Chalk			V										V	V	V	V	V	V							1- 6
Table-Door													V	V											0- 2
Dance-Concert																									0- 0
Car-Train									V				V		V						V				1- 3
Flame-Steam	V								V					V			V			V					2- 3
Church-Cat																									0- 0
Pencil-Cup																									0- 0
Bread-Lamp				V	V	V	V		V		V	V		V		V		V		V		V	V		7- 6
Flowers-Painting				V		V				V	V		V	V	V	V	V		V	V	V	V	V	V	4-11
TV-Radio			V			V	V				V			V			V				V				4- 3
Snake-Tiger						V							V	V	V										1- 3
Total	2	3	2	3	3	5	5	1	4	2	3	2	8	12	6	7	5	3	4	6	4	4	5	4	35-68

The sighted used 68 visual comparisons which constitutes 33.84 per cent of the 204 comparisons. This is almost twice as many as the number of visual comparisons made by the blind.

The significance of the difference between the number of visual comparisons made by the blind and the number of visual comparisons made by the sighted was tested with a "t" test.

The "t" score was 3.48 which is significant at the one per cent level with 11 degrees of freedom* This means that the sighted used significantly more visual comparisons than the blind.

Four pairs of words did not evoke any visual comparisons by either group. They were "talk-fly," "dance-concert," "church-cat" and "pencil-cup.* These were the distractor words selected by the investigator.

Definitions

Table 9 indicates the visual definitions elicited from the various children by the different words* It is organized in a manner similar to that in which Tables 7 and 8 were organized. It shows the words (rows) which were defined with visual concepts (V) by the different children (columns) who are identified by letter names. The total number of times each word was defined visually by each of the two groups and the total number of words defined visually by each of the children are also indicated on the table.

Definitions were considered visual when they contained a visual concept and not necessarily when they contained visual words.

TABLE 9. VISUAL DEFINITIONS MADE BY EACH CHILD AND FOR EACH WORD

	Blind												Sighted													
	A	B	C	D	E	F	G	H	I	J	K	L	a	b	c	d	e	f	g	h	i	j	k	l		
Coffee																									0	0
Lawn										V	V		V			V			V					V	3	4
Hot				V																					0	0
Light	V	V			V	V	V		V	V	V	V	V	V		V	V			V	V	V	V	V	9	9
Sweet																									0	0
Dark	V	V		V	V	V	V		V	V	V	V	V	V		V	V	V	V	V	V	V	V	V	10	11
Blood				V				V						V	V				V	V		V		V	2	5
Snake						V							V						V	V	V	V	V	V	1	7
Pretty	V		V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	11	12
Map				V		V		V						V				V	V				V		3	4
Sun	V				V	V			V				V		V	V					V			V	4	5
Water													V												0	1
Blue		V			V	V	V	V	V		V		V	V	V	V	V	V	V	V	V	V	V	V	7	12
Clown								V	V					V	V						V		V		2	4
Mirror	V		V		V	V	V	V	V		V	V		V	V	V	V	V	V	V	V	V	V	V	9	11
Look			V	V	V	V	V				V	V	V	V		V	V	V	V	V	V	V	V	V	7	11
Cat																									0	0
Warm																									0	0
Shadow					V	V	V		V				V	V	V	V	V	V	V	V	V	V	V	V	4	12
Sneeze																									0	0
Mouse								V			V				V				V			V	V		2	4
Candy																									0	0
Rainbow	V	V		V		V		V	V	V	V	V	V	V		V		V	V	V	V		V	V	9	10
Soap																									0	0
Fire									V							V					V			V	1	3
Totals	6	4	3	7	8	11	7	8	10	5	9	6	11	11	8	10	9	8	11	11	12	10	11	14		

84 - 28 per cent

125 - 42 per cent

The blind had 84 visual definitions out of 300 definitions for a percentage of 28. The sighted on the other hand, had 126 visual definitions for a percentage of 42.

The difference between the percentages of visual responses of the two groups proved significant at the one per cent level according to a "t" test. The "t" score was 3.78. The sighted did have significantly more visual definitions than the blind.

The words not defined visually by anyone in either group were the following:

coffee	hot
sweet	cat
candy	warm
sneeze	soap

All these, except for cat, were the distractor words. Cat was used as a visual word or a word that could elicit visual answers. The words eliciting the greatest number of visual definitions from the blind were: pretty (11), dark (10), light (9), mirror (9), rainbow (9), look (7), and blue (7). These were all directly visual words except for "mirror." The other directly visual word was "shadows" (4). That and "sun" (4) were the next in order of frequency. The seven words that were most frequently defined visually by the blind were also the most frequently defined visually by the sighted. Nonvisual definitions for these were hard to find. Some of the blind children said "I don't know" for many of these. All 12 of the sighted children defined three of the words visually—"pretty," "blue," and "shadows." Eleven of them had visual definitions for "dark," "look," and "mirror," while "rainbow" was defined visually by 10 sighted children. Only "dark" (10) and "pretty" (11) elicited more than nine visual definitions from the blind.

The blind said almost invariably that they had heard of these definitions at home from parents or siblings or picked them up from books. One child claimed that she could see light and that that was all she could

see. The possibility of this, to the best knowledge of the investigator, is nil because the child had plastic eyeballs in both her sockets. Some of the definitions were attempts at scientific explanations as some that were given for "rainbow."

An interesting note is that the scientifically most accurate definitions of rainbow and shadows came from a blind boy.

When the sighted were questioned about the visual cues for their definitions they always said with a quizzical look, "I have seen it."

The blind were using borrowed words and gave most visual definitions when they were forced to do so with directly visual words. This supported the third hypothesis of the investigator which stated that because the blind can not have any visual associations, they can define visual words only with secondhand words or words used by somebody else. It was also hypothesized that somebody always explains the terms and those explanations are the only definitions the blind could find for directly visual words.

It has been noted that in all the instances, the sighted used significantly more visual words, classifications, comparisons, and definitions than the blind. The sighted exhibited a significantly greater number and variety of visual terms and concepts than the blind. Even the words and concepts of the blind which were classified in this study as visual were not all visual. It was mentioned frequently that the blind did have nonvisual connotations. Whenever the blind were challenged about the visual terms, they answered in one of the following ways:

1. "I have felt it before." An example of this would be the "length" and "coldness" of a snake. They had felt a paper cut of a snake or a real snake.

2. "I have been told about it," The sources were usually parents or siblings. Friends were mentioned twice.

3. "I have read about it." This was with reference to cities they liked, the sun, and the rainbow.

4. "For me it is different. I can't see."

Only one child claimed to be able to see. This was the child with the plastic eyeballs. Another child implied ability to see by mentioning a favorite color and by claiming to judge people by their looks. When challenged, he said that he could not see and quickly changed the subject to the microphone at hand. He did say, however, that he could not see. There was one child whose favorite person was God because He could make her see. None of the other nine exhibited any hesitation in accepting their blindness. Therefore it seems questionable that the blind used visual terms to hide their blindness.

The findings of the study can be summarized with reference to the hypotheses proposed at the outset of the study.

The first hypothesis, which stated that the blind do not use as many visual words as the sighted because they have no visual reference point wag supported by the present study in that the blind used only 1.27 visual words in a hundred words while the sighted used 2.38 per cent visual words. The sighted used a significantly greater number of visual words than the blind.

The frequency with which visual words were used in nonvisual contezts, and the frequency with which visual words were explained with nonvisual connotations evidenced support for the second hypothesis which

stated that when the blind children used apparently visual words they did not conceive of those words in visual contexts. It had been hypothesized that other connotations of the words would be employed. Specific numerical data was not obtainable with regards to this aspect because there were many occasions in which the use of the words could have been both visual and nonvisual.

The greatest use of visual words by the blind was noted in the task of "definitions." On that part, the blind had to define many directly visual words or words that were only visual. When challenged about their definitions, the blind children repeatedly pointed to other people as their sources of information. Their definitions were borrowed. With reference to this, it was hypothesized that because the blind could not have visual assooiations they could define visual words only with secondhand words or words used by somebody else. The third hypothesis claimed that somebody always explained the terms and the definitions thus acquired were the only definitions the blind could find for directly visual words. The findings of the present study support that hypothesis.

With reference to the influence of age on the use of visual words it had been hypothesized that an increase in age of the blind child would bring about an increase in the number of visual terms used by the child. This was based on the assumption that an increase in vocabulary and also an increase in the number of opportunities for communication with the sighted would result in a greater use of visual terms. The present study, however, did not indicate that this was the case. There was a very small correlation between age and the number of visual words used. The small correlation that was found was negative indicating that

an increase in age brought about a decrease in the number of visual words if it did have any influence. Hence, the fourth hypothesis of the present investigator was not supported.

When the children in the two groups were asked to classify certain objects according to the sense category with which they associated each object the sighted had 21.52 per cent visual classifications as opposed to 6.06 per cent visual classifications of the blind. This tended to support hypothesis 5 which stated that the blind do not think of objects in visual terms.

The significant difference between the blind and the sighted children in the number of visual concepts utilized in comparing and defining visual terms indicates that the blind do not have visual concepts. "Visual terms were defined by the blind children, when they were forced to define the terms, by more words. In other words the visual terms remained mere words* This supported hypothesis 6. The hypothesis was that visual concepts, if any, would be formed more with reference to the words themselves than with reference to the sensory experience. The concept then, would not necessarily depend upon an initial experience. It was further hypothesized that visual words remained as mere words.

Verbs and adjectives formed the greatest number of visual terms used by the blind. Verbs were the most frequently used as visual terms. Verbs were used 52.3 times in every hundred visual words used by the blind and adjectives formed 31.2 per cent of the number of times visual words were used. This neither supported the seventh hypothesis nor did it question it. The seventh hypothesis stated that the visual words used by the blind would predominantly fall under one category.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A quantitative analysis was made of the visual terms used by the blind in their language as compared to the visual terms used by the sighted. The study consisted of two parts – a quantitative comparison and a study of the nature of the visual terms used by the blind.

A schedule, prepared by the present investigator, was presented to two groups of 12 students. Congenitally blind children without even light perception formed one group, A group of sighted children selected by matching with the blind formed the control group. The children were matched individually with reference to age, sex, race, grade level and verbal scores on the WISC.

The schedule was prepared for the purpose of eliciting as many visual answers as possible. It consisted of some questions and three "word games." The questions were in five sections and were about activities, places, reasons, people, animals, and things. The word games consisted of word comparisons, word classifications and definitions.

The schedule was presented to the children individually in an informal setting. The investigator could request clarification and elaboration of answers. The data was transcribed for analysis. Word counts were made to serve the first part of the study. The visual terms used by the two groups and answers to the word games were analyzed for the second part.

The sighted used a very significantly greater number of visual words than the blind.

There was no relationship between age of the blind and the number of visual words used by the blind. The blind used a few words more frequently than others while the sighted used a greater number of words which were distributed rather evenly in terms of frequency, Visual verbs formed the greatest frequency for the blind while visual adjectives were the most frequent for the sighted.

The blind classified, compared and defined as visual significantly fewer words than the sighted. The greatest number of visual words used by the blind were used when they were confronted with directly visual words or words that could only be visual. "Dark" and "rainbow" are examples of directly visual words.

When asked for clarification, the blind frequently suggested generalized connotations for the visual words. They quoted parents and siblings most frequently as sources for their visual words.

Only one of the blind children claimed to be able to perceive light and only light. The others did not hesitate to accept their blindness.

Conclusions

The study tended to support all but two of the hypotheses stated by the investigator. One of the two was not supported by the study while the other was only partially supported.

The findings of the present study indicated the following conclusions.

Concern over the overuse of visual words by the blind does not seem warranted.

Age apparently has no influence on the number of visual -words used by the blind.

Verbs form the greatest number of visual words used by the blind in the present study. Adjectives also were used frequently,

The blind do not seem to think of objects in visual terms.

The schools perhaps are not to be blamed for the visual words used by the blind. Parents and siblings were the visual word sources mentioned by the children.

The nonavailability of adequate substitute words also seems to play a part in the use of visual words.

It is doubtful if one could credit a lack of acceptance of blindness as a reason for the use of visual words.

Recommendations

Further research should be undertaken, not out of concern over the overuse of visual words by the blind, but to understand better the language habits of the blind.

There is a possibility that among the visual words used by the sighted there are many words which are nonvisual or in which the visual connotation becomes secondary to the nonvisual. In other words, the sighted may use just ad many apparently visual words as the blind in addition to some visual words. A study of whether or not such a set of apparently

visual words exists as a common part of the Eiglish language would prove interesting. If such a common set of terms is found, it would help explain the use of apparently visual words by the blind. Such a study would also provide information about the extent of generalization of meaning,

A study can be made comparing the proportions, of visual words to words belonging to the other senses, between the blind and the sighted to see if words of other senses also take on generalized connotations.

The present study can be repeated having children with a graded loss of vision using the congenitally blind, the blind with only light perception, the partially sighted and the sighted.

Studies need to be made to analyze the general language habits of the blind which might give one an indication to thought habits of the blind.

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VITA

Name: Natesh Rathna

Birthdate: December 12, 1934

Education:

Educational level	Place	Year of completion
High school	Mysore, India	1950
B.A.	University of Mysore, India	1955
B. Ed.	University of Mysore, India	1956
M.S. in Ed.	Hunter College, New York	June, 1957
M.S. in Ed.	Gallaudet College, Washington, D.C.	June, 1958

Work experience:

Teacher, Indiana State School for the Deaf, Indianapolis, Indiana, 1958-1959

Therapist, Indiana University Speech and Hearing Clinic, 1959-1960

Graduate Assistant, Indiana University Speech and Hearing Clinic, 1960-1962