CHAPTER IV

THE PRESENT STUDY

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The present study is unique in several aspects.

First and foremost, it is an exploratory study. Upon the advent of the Rosa Kulashova phenomenon several scientists jumped into the fray by testing and training in extraocular vision without starting from the beginning. The present study starts from scratch to explore the possibility of extraocular color vision.

Secondly, the researcher prefers to adopt an attitude of what Danny Steinberg (1966) refers to as an "open-minded skepticism" (p.324).

Thirdly, as far as the knowledge of the researcher goes, this study is the first of its kind. A comprehensive analytical study has not been undertaken in the area of extraocular vision.

The present study also tries to knock at the root of credibility. If a phenomenon has to be believable, it should have a scientific basis. Reports of someone's achievements alone should not form the evidence for it. On the other hand, one should not shy away from knowing more about it. At every point of scientific discovery, history has shown that, the established scientific community did raise its eyebrows. With further inquiry such discoveries have been imbibed into the existing notions of known phenomena.

The fifth reason for the present study to be unique is due to the fact that not a single person the researcher has come across possesses any knowledge of extraocular vision. This, in a way, provides an advantage especially because the subject would be blind as to the nature and purpose of the research. Contrarily, almost all the other studies in the area have been done because of the claims, the curiosity, and the propaganda.

Lastly, unlike most of the other studies the present study approaches extraocular color vision from a sensory experience viewpoint rather than as a perceptual process.
At this juncture, it is quite essential to distinguish between sensation and perception. John Corso (1964) believes that the distinction between the two is merely conceptual and that it does not refer to any "psychological effect" (p.277). He disagrees with Hebb's (1958) contention that they are two distinct theoretically known processes. However, modern psychology textbooks are very clear about the difference between the two processes (Hilgard, et al., 1976). Quoting William James, Morgan et al. (1979) has this to say:

'Part of what we perceive comes through the senses from the object before us, another part...always comes...out of our own head'. The 'out of the head' part refers to the elaborations, transformations, and combinations of the sensory inputs that make up our experience, or perception, of the world what it is. (p.313)

Such a distinction is also evident when extraocular color vision is differentiated from extraocular color perception.

The Concept Of Extraocular Color Vision

The interest in the Rosa Kuleshova phenomenon, as the Russians called it and later changed it to Bio-introscopy, induced a few scientists around the world to study it under controlled conditions. Such studies led them to believe that skin was involved in extraocular vision. Terms like dermo-optical perception, skin sight, skin vision, sight-by-touch, cutaneo-optic sense, etc. were used to describe the phenomenon.

Contrarily, there were a few others who did not want to give a singular importance to skin alone. Jules Romains (1924), in spite of trying to identify visual apparatus in the skin, preferred to use terms like eyeless sight, extra-retinal vision, and paroptic sense very much before the world came to know about it. Dr. Jacabo Grinberg-Zylberbaum (1983) used the

The word sensitivity has been preferred by most of the researchers as they feel that vision, sight, or perception directly or indirectly signifies the experience comparable to seeing with the eyes. Makous (1966) strongly advocates against using vision or sight and insists on calling the phenomenon cutaneous emissivity sensitivity.

After considering all the terms and their explanations, this researcher prefers to introduce a new concept to the realm of eyeless vision, Extraocular Color Vision (EOCV for short), and to propose the following definition: *Extraocular color vision is the distant irritability of the human skin to color.*

Thus, the present study attempts to open a new chapter in the book of eyeless vision by redefining the novel concept of extraocular color vision. Further explanation of the definition is provided in the next chapter.

**The Process Of Extraocular Color Perception**

*Extraocular Color Perception* refers to a perceptual process whereby the information derived by EOCV is decoded in terms of a given color. The cutaneous sensitivity of warmth, cold, pressure, or pain is translated into the corresponding hue that is being presented to the subject. Such translation and decoding is possible only through learning. It should be noted here that the term extraocular vision indicates perception of objects, including color, without the mediation of eyes. Thus extraocular vision is a general term which comprises of both extraocular color perception and EOCV.
Several scientists have devised different strategies and have successfully trained both blind and sighted subjects (Grinberg-Zylberbaum, 1983; Gris & Dick, 1980; A. S. Novomeisky, 1963b) in perceiving color extraoocularly.

![Diagram of the process of extraocular color perception]

**Fig 4.1 The process of extraocular color perception**

As the present study is basically interested in EOCV rather than in extraocular color perception, it would suffice to say that while EOCV forms the sensation part, the process of extraocular color perception includes both EOCV and perceptual learning. The relationship between EOCV and extraocular color perception and the processes involved in EOCV are depicted in the above diagram.

**Genesis Of The Problem**

Scientific quest sometimes begins with heuristic hunches (Kerlinger, 1978). Such hunches can be explored by a "person-centered approach" (Lyons, 1965, p.5) in experimental psychology. However, the quest should not merely satisfy the curiosity of the researcher. It
has to be methodical, deductive and must be able to establish accurate relationships. It should lead to the understanding of the problem in question with workable experimental design. Subsequently, it must provide the basis for a theoretical framework through a set of systematically established procedures.

Studies in extraocular vision have not been able to achieve all these. One reason lies in the fact that the researchers were more interested to try it out and apply it without delving into the intricacies of the phenomenon. The second reason is due to the supposition that extraocular vision adheres to the all-or-none principle: either one has the ability or one does not have. Thirdly, the phenomenon itself was under a cloud of doubt (Christopher, 1975; Gardner, 1966). Finally, the role of ESP in extraocular vision is quite significant. Even in a thoroughly designed experimental study on skin sensitivity to light, Steinberg (1966) found that “the exceptionally high scorer who was tested a total of six times said that he had felt ‘nothing special’ and that he had made his judgments by ‘intuition’ (p.328).

All these considerations prompted the researcher to probe the area of EOCV. Can any individual be tested in differentiating colors under experimental conditions? Does everyone have the ability? If so, would all the subjects show the same degree of sensitivity? If they do not, then what other psychological functions are responsible for such variability? These hunches have originated the present study.

Need For The Present Study

Seven decades of intermittent interest in EOCV has contributed very negligibly in understanding human sensitivity. While technological development has increased geometrically, lesser and lesser importance is being given to the development of innerspace. It
is quite disheartening to note that it needed a Rosa Kuleshova to invoke interest in EOCV after a lag of almost 40 years since Romains ventured into a Psychology of Discovery:

I hoped for the advent of a psychology of discovery, anxious to discover new material. The identifying of a yet unknown sense headed the list on this program of psychology of discovery. (Romains, 1965, p. 451)

After 1967 the interest in EOCV waned, only to trickle down here and there. Instead of waiting for another Kuleshova to start a burst of another set of hurriedly conceived studies, it is better to be prepared and well-armed to welcome the gifted individual into a scientifically established EOCV laboratory so that greater insight into the human sensitivity is obtained.

In order to achieve this goal it is necessary to overcome the lacunae in the study of EOCV. This is possible when a collective effort by a great number of scientists is put forth. However, to elicit such support, it is essential to infuse credibility in EOCV and remove doubts about the potential capability of human skin sensitivity.

As a first step, an exploratory study of EOCV, comprehensively dealing with the subject matter, is needed. Secondly, a psychological approach to human sensitivity is long overdue. Such an approach helps the scientists in understanding the individual as a human being. It also yields the identification of the predictors of EOCV. Hence, the need of the hour is to delink the sensory aspect of extraocular vision from its perceptual counterpart.

Any research should contribute to the knowledge and philosophy of science. It should enrich the existing knowledge and theory and add to the development of future theoretical constructs. The present research is aimed at fulfilling such needs.
The application value of the study is equally important. If EOCV is measurable, it should provide a springboard for further training and development. The need is to prepare the basis for such applications.

It is due to all these considerations that the need for the present study has arisen.

Importance Of The Present Study

The traditional distinction between various fields of study is no longer operational. Inter-disciplinary approaches have become crucial. Psychologists will have to lend and borrow information to and from various other sciences. Physicists, physiologists, and neurologists have contributed very little to the understanding of EOCV, and they conveniently keep the issue out of their jurisdiction though they have abundance of knowledge at their disposal that can explain the phenomenon. The present study makes an attempt to invite them into the realm of human sensitivity by unravelling the latent information.

In addition, human behavior is quite complex and dynamic. A comprehensive approach to the study of behavior is necessary in terms of its physiological, psychological, social, and spiritual bases. The present study contributes to the understanding, though in a limited way, by identifying and studying the bases of EOCV.

More importantly, it is essential that EOCV is included in the study of perception as it provides a greater insight into the understanding of sensory and perceptual processes. Such an understanding can help in building the bridge between psychology and parapsychology.
Assumptions Underlying The Present Study

Based on the groundwork the researcher has undertaken, the following assumptions can be outlined for studying EOCV.

1. The distant irritability of the human skin to all colors is inherent, not totally lost in the evolutionary process.
2. Sensation and perception are two distinct psychological processes.
3. EOCV studies only the sensory experience of the individual.
4. Similar to other inherent capabilities in human beings EOCV, too, has individual differences. Hence the variability is measurable.
5. EOCV is distributed normally in the population just like any natural phenomenon.
6. EOCV is not ESP.
7. EOCV is molded by learning. However, such learning need not be perceptual.
8. Human skin is irritable to color whether the source is light or pigment.
9. EOCV is dormant as it is not used consciously due to the domination of other sensory channels.
10. Reducing the inputs from other sensory channels invokes EOCV.
11. Variability in EOCV is related to some of the physiological, psychological, social, and spiritual aspects.

Strategy Of The Present Study

Cronbach (1957), Gulliksen (1968), and Owens (1968) have stressed the need for combining experimental and correlational techniques so that it would enable the researcher to attack difficult research problems more powerfully. The strategy of the present study is to fulfil their expectations.
The present study is a multivariate behavioral research. The variability of an individual in EOCV may be related in some way to certain psychological, social, physiological, and spiritual aspects. Keeping in mind the complex nature of the problem, the strategy has been devised to use a combination of research methods to tackle the problem.

Before introducing a construct into a field of study, the researcher should make sure that it is amenable to theoretical explanation. It is also necessary that the construct has the capability to be woven into the existing theoretical knowledge and framework.

This aim is achievable through theoretical research in the form of library research. "In library research one attempts...to derive hidden generalizations from seemingly diverse data" (D'Amato, 1970, p.4).

This has been attempted by the researcher as an initial step in understanding the intricacies of EOCV. The information obtained through library research has been analyzed and presented in the second chapter on Conceptual Framework.

No construct is meaningful unless it is measurable. As EOCV has been introduced by the researcher into the realm of extraocular vision, and as it forms the basis for further understanding and prediction of human behavior, it is essential that it be reliably and validly measurable.

This is possible only through methodological research, which is a "controlled investigation of the theoretical and applied aspects of measurement ... and ways of obtaining and analyzing data" (Kerlinger, 1978, p. 703).

Such a measurement is undertaken in the present study under the rubric of experimentation. This strategy is evolved keeping in mind the advantages of experimental study. In addition, EOCV is such a subtle phenomenon that it has to be isolated from the
general behavior of the individual. "In experimentation ... the variables of interest are subject to direct manipulation" (D'Amato, 1970, p.7).

In the present study, stimulus variables are manipulated directly by the researcher to see its effect on the subject's responses. Blocks are manipulated to measure the effect of practice on EOCV.

In addition to the experimental design, other methodological problems and hypotheses are dealt with under the measurement of EOCV.

The other part of the present study, however, is correlational research. The researcher is interested not only in standardizing a measurement technique but also to know what characteristics in the subjects are related to EOCV. As most of the variables cannot be manipulated directly, correlational research provides one of the best solutions for a detailed understanding of human sensitivity. "Correlational research ... involves the manipulation of specific variables chosen from the area of research interest" (D'Amato, 1970, p.7).

In exploratory field studies the researcher faces several problems. One problem is to identify the predictor variables. Especially when almost nothing is known about a phenomenon like EOCV the problem is confounded. In addition, too many relevant variables are involved.

Nevertheless, prior groundwork and informal studies have helped this researcher in identifying the predictor variables under the following categories: background, personal, psychological, and visual impairment variables. The measures on the predictor variables are obtained through the use of various methods: Objective observation is used to record the subject's responses and behavior. The use of documents and reports is necessary to determine the extent of visual impairment. Some data, especially background information and personal information, are collected through interview as these information might help in formulating a
theoretical framework. The neuropsychological behaviors like haptic sensitivity and spatio-motor ability are tested under laboratory setting. Psychological testing is used to measure various psychological aspects. And, as mentioned earlier, the sex of the subject and the visual acuity are determined by sampling.

Thus, the strategy of the present study is three-fold, as summarized in the table below.

Research methods are adopted accordingly to apply these strategies.

Table 4.1 Strategy of the present study

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Research Method</th>
<th>Method of Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>To establish the possibility of EOCV</td>
<td>Library Research</td>
<td>perusing books, journals, periodicals, etc.</td>
</tr>
<tr>
<td>To measure EOCV and standardize the measurement</td>
<td>Methodological Research</td>
<td>laboratory experiment</td>
</tr>
<tr>
<td>To determine the effect of stimuli, practice, and time of the day on EOCV</td>
<td>Experimental Study</td>
<td>laboratory experiment</td>
</tr>
<tr>
<td>To relate EOCV to certain background, personal, and psychological aspects of the subject</td>
<td>Exploratory Field Study and Correlational Research</td>
<td>sampling, observation, use of documents and reports, interview, questionnaire, psychological testing, and laboratory testing</td>
</tr>
</tbody>
</table>

Appropriate univariate, bivariate, and multivariate statistical analyses will be undertaken to explain the obtained results and to test the hypotheses. In order to analyze the relationship between several predictor variables and the criterion variable the most appropriate statistical design is the multiple regression analysis. This analysis also helps in identifying the predictors of EOCV. Another way of exploration is to see whether low and high scorers on EOCV tend to differ with respect to the predictor variables. The canonical discriminant function analysis provides insight into such a difference between the two groups.
Alms And Objectives Of The Present Study

The researcher hopes to fulfill the following aims and objectives:

1. To devise a measuring instrument and technique to quantify EOCV.
2. To establish the reliability and validity of the measurement.
3. To test the assumptions upon which EOCV is defined.
4. To correlate some of the background, personal, and psychological variables with EOCV.
5. To analyze the effect of certain background variables on EOCV.
6. To adopt and refine the measurement of haptic sensitivity and spatio-motor ability.
7. To analyze the variability among the blind in relation to EOCV.
8. To have an insight into the blind individual's behavior.

Statement Of The Problems

The nature of an exploratory study is such that it is possible to explore the relationship of several variables on the criterion variable. The problem ought to take into consideration the complexity of interrelationship between the variables and their collective influence on the dependent variable. Keeping this in mind, the problem of the present study is stated thus: Are certain background, personal, and psychological variables related to EOCV?

As the background and personal variables have an impact on the psychological functioning of the individual, the problem may be restated much more generally as: What are the psychological correlates of EOCV?

The major problem gives rise to many more sub-problems:

(a) Is EOCV measurable? If so, to what extent such a measure is reliable and valid? (b) Does learning occur during sensory experience? (c) Do the blind people differ from the sighted on EOCV? (d) Does the sex of the subject have any influence on the EOCV performance? (e)
Do sex of the subject and visual acuity interact in the performance on EOCV? (f) Do the subjects differ from one another in their background, personal, and psychological characteristics? (g) To what extent would these characteristics interact in predicting EOCV in an individual? (h) Do high and low scorers on EOCV differ on any of these characteristics? (i) Are factors associated with visual impairment related to EOCV?

Implications Of The Study

1. The understanding of skin's potential to identify color has greater implications for further studies in human sensitivity.
2. Better measurement techniques and greater controls can be devised to measure EOCV.
3. EOCV contributes also to a conceptual understanding of the sensory and the perceptual mechanisms. It offers the initial step towards the building up of a theoretical framework.
4. Better training strategies can be evolved through the understanding of EOCV.
5. Training in EOCV and consequently in extraocular vision opens up a totally new world view of sensory experience.
6. Especially for the blind people, who have no other way of distinguishing color, EOCV provides a greater insight into the world of the sighted.
7. Neurophysiologists have an additional source of information to redevise their experimental strategies.
8. Knowledge of EOCV can enrich developments in prosthetics and psychonomics.
9. A study of Consciousness would be more meaningful with an understanding of EOCV.