Methodology
This chapter included the statement of research problem, the underlying assumptions, objectives, hypotheses, sampling procedure, research design, variables, tools and the statistical techniques used.

III.1 Problem statement

*The psychosocial dynamics of academic performance was differently determined for the visually and hearing impaired and non-impaired male and female adolescents studying in class VIII and X.*

III.2 Assumptions, Objectives and Hypotheses

**Assumption 1**

Berzonsky (1988, 1989) observed that individuals differed from each other in terms of cognitive and other psychosocial processes in forming and maintaining their sense of self-identity. Solantus (1991) noted that a powerful objective tend to induce in persons a strong sense of subjective experience of being stressed, yet the intensity of stress and its effects on the behaviour varied. Given one's social context and the need priority, one could perceive a stressor differently from the others, and also respond differently. If one handled or coped up with the stressor efficiently it would strengthen one's feelings of self-worth and ensure overall adjustment. However, in case of an impaired person the same stressor may result in more severe stress depending on the type and severity of impairment. Particularly, during the adolescent period when the physiological, physical, social and psychological changes take place, the number of stressors and the demands on the person to meet the challenges could become more threatening, and particularly in case of the sensory impaired. Even among the sensory impaired, problems resulting from hearing impairment were.
enormous and more disabling than vision impairment, as loss of hearing was always associated with deficits in language acquisition which ultimately resulted in poor communication skills, poor concept development, difficulty in understanding others or expressing their feelings and thoughts, and poor educational performance (Meadow, 1983). Therefore, it was assumed that students having visual impairment, hearing impairment and non-impairment may differ from each other in the perception of stress, self-esteem, social-emotional adjustment, and academic performance.

Cognitive problem solving skills were also known to vary with age. As children grew older their perceptions of reality, group status, and basis of social comparison processes changed. Their coping strategies, decision-making power and use of defense mechanisms became more differentiated. Their experience in handling different stressors could reduce their stress and affect the use of other psychosocial processes. This was also true for the sensory impaired. Thus, it was assumed that students at higher educational level might differ from those at lower levels in their perception of stress, self-esteem, social-emotional adjustment, academic performance and other output variables.

A sensory impaired female child was considered doubly handicapped and looked down in our society. At the adolescent stage when self-consciousness and the need of meeting sex role expectations were at their maximum, any impairment might lead to self-isolation, depression and other disabling problems - both in males and females. The higher pressure on females for sex-role conformity pushed them to achieve high in school yet, because of their double handicap females may experience higher stress, lower self-esteem, and low social-emotional adjustment than males.
Objective 1
To find out the difference by category of students (visually impaired, hearing-impaired & non-impaired), educational level (class VIII and X) and gender (male and female) on different psychosocial and output variables.

Hypothesis 1
Adolescents in different categories, classes and gender will vary significantly on different psychosocial and output variables.

Assumption 2
As all psychological processes are inter-linked and interdependent on each other, higher stress might exercise a negative effect on self-esteem, social-emotional adjustment, and academic performance. Thus the more an adolescent was stressed, the lesser would be his/her self-esteem, social-emotional adjustment, and the more he/she would show problem behaviours. High self-esteem might have stress buffering and facilitating effects on social-emotional adjustment, while it may reduce the number of behavioural problems. Good social-emotional adjustment could reflect the person’s ability to turn situation in his/her favour and be able to maintain positive feelings.

Objective 2
To find out the inter-correlations among different psychosocial variables.

Hypothesis 2
The psychosocial variables will be significantly related to each other and academic performance.

Assumption 3
Considerable research showed that environmental stressors significantly increased the risk to psychological well-being (Thoits, 1981,1983). They emphasized the multiple ways by which the social environment influenced the well-being. For example, family was the reservoir of support upon
which the child depended for meeting one's physical, emotional and socio-educational needs. Family's social and financial conditions played a vital role in child's physical need satisfaction, total adjustment, his/her all round performance, his/her behaviour and his/her confidence in maintaining relationship with others. Therefore, good socio-economic status of the family might have a good impact on child's all round development and performance as he/she could get good physical and mental support in such family (Kessler, 1979). Especially, if the child was an impaired one his/her needs multiplied due to the impairment specific requirements, whereas good social, emotional and financial conditions might also help to decrease the intensity of disabling feeling, by providing for more appropriate facilities and focusing upon child's capabilities, aptitude, etc. Further, as the needs of visually impaired, hearing impaired and non-impaired were different, the importance and impact of different background variables for them might also differ affecting their psychosocial development. The age of onset of the sensory impairment and severity of associated impairment could also determine its psychosocial impact. Thus, it was assumed that the correlations between psychosocial and background variables might vary among adolescents.

**Objective 3**
To measure the association between background and psychosocial variables.

**Hypothesis 3**
The background variables will significantly relate to psychosocial variables.

**Assumption 4**
A number of psychological and environmental variables facilitated students' educational performance. One's socio-economic status was known to impact not only students' personality and behaviour, but played an important role in decreasing the intensity of stressors arising from nonfulfillment of psychosocial and physiological needs and thereby,
positively affecting their performance in different fields. Parental education and occupation had direct and significant positive impact on students’ persistence in education (Austin, 1964). Similarly, the intensity of stress, one’s self-confidence and level of social-emotional adjustment could play important role in performance, because good adjustment fostered confidence, negated stress, restored concentration and so on. It may therefore be assumed that both background and psychosocial variables may relate to academic performance of students in all categories.

Objective 4
To examine the relationship of background and psychosocial variables with academic performance and other output variables.

Hypothesis 4
(a) Background and (b) psychosocial variables will significantly relate to academic performance and other output variables.

Assumption 5
Academic performance was an interactive function of many background and psychosocial variables. However, the contribution made by different variables to the academic performance of visually impaired, hearing-impaired and non-impaired adolescents might differ because of their specific problems and/ background. Therefore, it was assumed that academic performance of students in three categories may be predicted by different background and psychosocial variables.

Objective 5
To predict the academic performance of adolescents in different categories by using background and psychosocial variables.

Hypothesis 5
Background and psychosocial variables will differentially predict academic performance of different categories of students.
III.3. Design of the study
A 3 x 2 x 2 factorial design with categories of students (visually impaired, hearing impaired and non-impaired) at three levels, education at two levels (class VIII and X), and gender at two levels (male and female) was used.

III.4. Sample
This included selection of schools and students.

➢ Selection of schools
Since there were very few schools, both special and integrated, providing education to the visually and hearing-impaired adolescents studying in class X, the option to select schools was limited. Then the existing schools varied in terms of residential-nonresidential special schools, residential-cum-day school, integrated schools, the scope for selecting only integrated or special/residential schools, was also very difficult. Therefore, students from both integrated and special schools were included. Visually impaired students were taken from Blind Relief Association, the only boys Senior Secondary Special School at Lal Bahadur Shastri Marg, and from Vikashpuri Virja Nand Andha Kanya Vidyalaya, the only girls’ Senior Secondary Special School in Delhi. Hearing-impaired students were included from Balwant Rai Mehta Vidya Bhawan, an integrated co-ed secondary school for hearing impaired students, in G.K.-II, Delhi, and Lady Noyce Government Co-education Special Secondary School, Delhi Gate. Non-impaired students were selected from Government Boys Secondary School and Govt. Girls Secondary School in Masjid Moth, South Ext.-II.

➢ Relevant information about the schools
All blind schools included in the study were Government-aided Senior Secondary Schools having residential facilities, following the CBSE pattern of examination with five optional subjects - Hindi, English, Sanskrit, Social Studies and Music. However, class VIII had two more subjects-Mathematics and Home-Science/Cane Work. Balwant Rai Mehta Vidya Bhawan the only secondary integrated school for hearing impaired
students in Delhi providing education up to class X, was a non-residential school aided by Central and State Government and followed an open school examination system in five subjects - Hindi, Maths, Home Science, Hindi Typing and Computer. Whereas, Government Lady Noyce was the only secondary special school in Delhi. It had hostel facilities for out-stationed students. This school followed CBSE examination system with a facility for choosing five optional subjects - Hindi, Maths, General Science, Social Studies and Art/Drawing. Government Secondary Boys and Girls Schools also followed CBSE examination system with five optional subjects - Hindi, Mathematics, General Science, Social Studies and Sanskrit. Hindi was the only common subject for all students.

**Selection of students**

A total of 270 class VIII and X visually impaired, hearing-impaired and non-impaired adolescents of both sexes were selected from different schools in Delhi. Among them 79 were visually impaired, 80 were hearing-impaired and 111 were non-impaired. There were 161 class VIII and 109 class X, and 142 male and 128 female students. They were between 13-21 years of age and majority of them were from low or low-middle class family background. The students having more than one impairment were not included in the sample. The sample distribution by class and gender in each category is given below:

**III.5 Sample Distribution**

```
N = 270

VI = 79
  VIII = 39
    M = 16
    F = 23
  X = 40
    M = 20
    F = 20

HI = 80
  VIII = 60
    M = 31
    F = 29
  X = 20
    M = 17
    F = 8

NI = 111
  VIII = 60
    M = 31
    F = 31
  X = 49
    M = 32
    F = 17
```
III.6 Variables

- **Matching variables**
  i) Category (visually impaired, hearing-impaired and non-impaired students).
  ii) Educational level (class VIII and X)
  iii) Gender (male and female)

- **Background variables**
  i) Age
  ii) Parents' education
  iii) Parents' occupation
  iv) Family income
  v) Number of siblings
  vi) Age of onset of the disability
  vii) Severity of impairment
  viii) Problems other than vision and hearing
  ix) Parents' impairment status
  x) Preschool training

- **Measured variables**
  i) Stress
  ii) Self-esteem
  iii) Social-emotional adjustment
  iv) Behavioural problem
  v) Study related behaviours
  vi) Extra-curricular activities

- **Observed variables**
  
  **Classroom behaviours**
  a. Inattentiveness
  b. Study involvement
  c. Withdrawal behaviour
Academic performance was used as a dependent variable and the rest as predictors.

II.7 Description of variables

**Stress:** Lazarus defined (1978) stress as any event in which environmental or internal demands or both exceeded the adaptive resources of an individual, imbalancing his/her homeostasis condition. Sensory impairment i.e. impaired vision and hearing could create excessive imbalance between internal resources and external demands and could thus become an extra source of stress and strain for any person. Hence, stress was defined here in terms of anxiety, fatigue, somatization, interpersonal sensitivity, obsessive-compulsive behaviour and loneliness.

**Self-esteem:** According to the social comparison theory (Festinger, 1954), people compared themselves with others in order to evaluate themselves. These social comparisons influenced individual's attitudes towards themselves. It included a person's own evaluation about his self-worth and self-regard. Thus, self-esteem was defined here in terms of personal evaluation on the basis of social comparison.

**Social-emotional adjustment:** In general, adjustment was defined as a process, involving both mental and behavioural responses, by which an individual strove to cope successfully with inner needs, tensions, frustrations and conflicts; and to effect a degree of harmony between these inner demands and those imposed on his/her objective world. The more the person was adjusted, the less behaviour problem he/she will manifest in day-to-day behaviour and the better will be the overall performance. Meadow and Kendall (1983) defined adjustment in terms of effective social and emotional behaviours, less compulsive and dominating behaviour, and less anxious and obsessive behaviour. According to them sensory
impairment first affected the interpersonal dynamics of social interaction which was the root cause of low self-esteem and low self-concept followed by adjustment failures at different points of time. Social-emotional adjustment was defined here in terms of teachers’ perceptions of the impaired and non-impaired students’ balance between inner and outer world manifested in terms of anxiety, impulsiveness, sociable behaviour, dominating behaviour and aggressive behaviour.

**Behavioural problems:** Any deviant behaviour such as, telling lies, aggression, disobeying, argumentativeness, bad social conduct etc. were generally considered as socially disapproved behaviours. Here behavioural problem was defined in terms of what teachers perceived problematic in students' behavior inside the school.

**Study related behaviour:** This was defined a student’s study behaviour perceived as positive or negative or neutral by the teacher. If a teacher said that so and so had good memory, attention, concentration, interest and motivation in study, it was taken as the child’s positive study related behaviours.

**Extracurricular activities:** This was defined in terms of student’s participation in drama, cultural activities, sports, social activities, arts/drawing/painting competition etc. The teachers provided this information.

**Inattentiveness:** This was defined as lack of concentration in the ongoing activities related to study. It was reflected in behaviours like looking here and there, making faces, interpersonal talking, and snatching/fighting behaviour between two/more students.
**Study involvement:** This included one to one correspondence (eye contact) between student and teacher while he/she was writing on the blackboard or referring to a book, clarification of doubts immediately; answering the questions; and giving signs of understanding.

**Withdrawal behaviour:** This was defined as not being attentive and non-involvement in the class.

**Academic performance:** The dictionary of education defined academic performance as the knowledge attained or skills developed in school subjects, usually expressed in terms of test scores or marks assigned by the teacher. Hence, academic performance was defined in terms of the percentage of marks obtained by students in the final examination. This being a promotional examination, all students were expected to be performance motivated.

**III.8 Tools used**

Research on sensory impaired students had been beset with the difficulty of finding appropriate instruments that matched the language and reading levels of this population. The following scale and inventories (modified translated form) were used, as these were used in several other relevant studies.

**Stress:** Hopkin’s Symptom Checklist was used to measure students’ stress. Originally the list included 45 statements of reactions towards stress spread over five dimensions, like somatization (12 items), obsessive-compulsive thoughts (8 items), interpersonal sensitivity (7 items), depression (11 items) and anxiety (7 items). After pretesting only 30 items were retained for the final study. This used a four point response format ranging from not at all true for me to extremely true for me. Scoring was done by assigning 1 to not at all true for me, 2 to little bit true.
for me, 3 to quite a bit true for me, and 4 to extremely true for me. A high score indicated high stress. Cronbach reliability of the stress scale was 0.74.

**Self-esteem:** Basavanna's self-esteem scale consisted of 90 items and had a reliability of 0.96. It was pretested and 28 items were included in the final study. The original response pattern of true-false type was changed to a 3-point scale true, sometimes, and false. Scoring was done by assigning 0 to true, 1 to sometimes and 2 to false. The positive and negative statements were scored accordingly. A high score indicated low self-esteem.

**Social-emotional adjustment:** To measure students' social-emotional adjustment, the teachers of the participating schools were requested to rate their students on Meadow/Kendall Socio-Emotional Adjustment Scale for the Deaf. Originally the scale had 49 statements covering 5 dimensions of adjustment, namely, sociable communicative behaviour; impulsiveness and dominating behaviour; developmental lags; anxious and compulsive behaviour; and special items related to deafness and a reliability of 0.89. Pretesting was done only on 40 items or 4 dimensions and all 40 items were retained in the final study. This used a 5-point response format ranging from very true (T)=1, true (t)=2, false (f)=3, very false (F)=4, and cannot rate (?)=5. A high score on this scale implied good social-emotional adjustment and less number of negative behaviour. To find-out a particular child's adjustment score the ratings of all the teachers on a child were averaged.

**Behavioural problems:** All teachers were asked to write down most frequently occurring problem behaviours for each student. These were then grouped into three categories by the number of type of problems. Scoring was done by assigning 1 for more than 3 type of problem behaviours, 2 for
less than 3, and 3 for no behaviour problems. High scores indicated fewer behaviour problems.

**Study related behaviour:** All the teachers were asked to report their perceptions of student’s study behaviour. The ratings were later averaged and categorized under 3 types of behaviours, like positive, neutral and negative study orientations. The positive study orientations were assigned a score of 3, neutral view 2 and negative study behaviour -1. A high score indicated positive study related behaviour.

**Extracurricular activity participation:** This was rated on a Yes/No type rating scale by teachers. Participation in extracurricular activities (Yes) was scored 2 and (No) as 1. A high score indicated active participation in extracurricular activities.

**Socio-personal variables:** A personal proforma was used to get information on background variables, like, name, class, roll no., age, sex, parents’ education and occupation, number of siblings, family income, onset of the disability, pre-schooling, family history of disability etc. In case of the blind and non-impaired students this information was collected from the students. But in some cases of hearing impaired students, information about family history was taken from the school records. All the scales were translated into Hindi by back translation method.

The information on the above variables were classified and coded according to the predetermined criteria, as given below:

**Class:**

<table>
<thead>
<tr>
<th>Class</th>
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<tbody>
<tr>
<td>VIII</td>
<td>1</td>
</tr>
<tr>
<td>X</td>
<td>2</td>
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</tbody>
</table>
**Sex:**
- Male: 1
- Female: 2

**Age:**
- Between 13-15 years: 1
- Between 16-18 years: 2
- Between 19-21 years: 3
- Above 21 years: 4

**Parent's education:**
- Non-literate: 1
- Upto Class V: 2
- Between Class VI to VIII: 3
- Class VIII-X: 4
- Upto XII: 5
- Above graduation: 6

**Parent's occupation:**
- Farmer / Labourer / Veg. vendor: 1
- Group IV service: 2
- Group III service / small scale business: 3
- Group II service / medium scale business: 4
- Group I service: 5

**Family income:**
- Below Rs. 2000/-: 1
- Between Rs. 2000/- and Rs. 5000/-: 2
Between Rs. 5000/- and Rs. 8000/-  3
Above Rs. 10,000/-  4
Above Rs. 13,000/-  5

Number of siblings:
One / Two  1
Three / Four  2
Five / Six  3
Seven / Eight  4

Severity of impairment:
Partial blindness / deafness  1
Total blindness / deafness  2

Parental status of impairment:
Both parents blind / deaf  1
Either parent blind / deaf  2
Neither parent blind / deaf (normal)  3

Pre-schooling experience:
Yes  1
No  2

Age of onset of disability:
By birth  1
Below 2 years  2
2-5 years  3
5-10 years  4
Above 10 years  5
Academic performance
Aggregate marks in final examination were noted down, and converted into percentage. A copy of each scale has been included in the Appendix.

III.9 Pre-testing of scales
Pretesting of all scales was done in one blind school, one deaf school and one government high school for non-impaired. 10 students from each class (class VIII & X) were included randomly and a total of 60 students were administered the questionnaires. Students with vision impairments were interviewed with the help of questionnaires and the hearing-impaired students were administered questionnaires through a teacher. Difficult words were replaced by simplified words immediately, whenever the question arose. No major changes were required for the students with vision impairments and those having no impairments. The scales were rechecked by a Hindi language teacher in the deaf school against the students' responses prior to the final study.

III.10 Procedure for final administration
Structured interview method was adopted for each visually impaired student to administer the scales. In case of the hearing-impaired students depending upon the language level of a particular student, the questionnaires were given to him/her in the presence of a teacher. Questions were explained to them through sign language, finger spelling, and gesture. In the special school it was done with the help of a partially deaf teacher and in the integrated school with a normal hearing teacher. In case of non-impaired students all questionnaires were administered in a small group of 15-16 students in the presence of the class teachers.
III.1 Observation of classroom behaviour

(i) Context - Observations were conducted in classrooms while a teacher was taking a subject/class - during November-December '1998 through January-February '1999. Seven observations were done in each of 4 different subjects. Thus, a total of 28 observations were made for a child.

(ii) Participants - Participants were the 270 students who had earlier participated in quantitative scales. Age of participants was between 13 to 21 years and they mostly belonged to low or low-middle socio-economic background.

(iii) Observer - The observer was the researcher herself. She sat in the classroom numerous times before the actual observations were made to become well acquainted with every student by the time of actual recording of date (called habituation technique). Her presence in the classroom no longer appeared to affect the students' normal behaviour (called the reduction of Hawthorne effect or the reduction of the researcher's effect). The teacher's confirmation was obtained to ensure this.

(iv) Behaviours/Actions of Participants - Different classroom behaviours were recorded following the behaviour checklist. Any additional comment from the teacher other than in the checklist was also recorded, to enrich the data. A total of three variables were formed using this data such as, inattentiveness, study involvement, and withdrawn behaviour.

(v) Data-recording systems - The simplest way adopted to record the students' behaviour was to place the students serially by their roll number. This made the behaviour recording easier and accurate. The frequency of each behaviour was noted against the particular observed behaviour of a student on the structured observation schedule.

(vi) Data Recording Methods - Paper and pencil recording method was adopted, as it was cheap, flexible and mobile.

(vii) Scoring and Analysis of Behavioural Data - The total tally marks on 28 observations on three different variables for every single student were
counted. Then each behaviour was averaged for each student in a class to be later analyzed along with the quantitative data for statistical analysis.

**III.12 Statistical techniques**

- **Analysis of variance** was used to analyze the data on different measured and observed variables to find out if students in 3 categories, 2 classes and 2 sexes differed significantly.
- **t’ tests** were made to compare different groups on different variables.
- **Pearson ‘r’** was computed to ascertain the relationship among different psychosocial variables, and between psychosocial and background variables. The relationship of psychosocial and background variables with academic performance was also found.
- **Regression analyses** were done to find out the contributing factors of academic performance for males and females in different categories and classes.
- **Percentages** were computed for students having a parental history of impairment, severity of impairment and pre-schooling experiences for three categories of students. In addition, computations were also done on age of onset of disability and severity of impairment for the visually and hearing-impaired.