CHAPTER VI

SUMMARY, CONCLUSIONS, IMPLICATIONS AND SUGGESTIONS
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SUMMARY

Problem Statement

This study attempted to assess the differences in the effectiveness of the visual mode, the auditory mode, and the combined visual and auditory modes of learning a vocational skill by adults having severe mental retardation. It further tested if such individuals could self-monitor their performance on the skill acquired.

ASSUMPTIONS

1. As research has increasingly indicated the possibility of mentally retarded individuals being able to perform complex tasks, it was assumed that even the severely mentally retarded individuals may be successfully trained for performing a complex vocational task, such as the assembly of a ball point pen.

2. Attention has been considered a pre-requisite to memory. The human mind, as a processor of information, was known to respond primarily to verbal, meaningful information in acoustic and visual forms. It was assumed that the severely mentally retarded individuals may be able to absorb the information presented to them in visual and acoustic forms,
and their basic deficit of attention may be reduced by emphasizing 'focalization and concentration' in training.

3. Mentally retarded persons are unable to retain and store information and this limits the extent of their learning. It was assumed that if the learning task presented to them is well organized (in a sequential order, broken into several steps and vividly presented), it may maximize their potential for learning, and also facilitate the retention and retrieval of steps involved in the learnt tasks.

4. Individuals having a low I.Q. and falling in the severe range of mental retardation demonstrated a low level of skill acquisition and performance, as compared to the individuals having a relatively higher I.Q., but in the severe range of mental retardation. It was assumed that one's competency on the job may not depend on one's level of IQ but rather on the level achieved via repeated trials and exercises.

5. The use of intelligence tests on individuals with mental retardation showed that some individuals have relatively more strength on non-verbal tasks such as copying geometric designs, drawing pictures from a visual pattern or identifying the missing parts in pictures, while some others responded relatively well and easily to auditory cues. It was assumed that all severely retarded individuals may respond differently to the different modes of learning, such as the visual mode, the auditory mode or the combined visual and auditory modes.
6. There are individual differences observed on sensory and motor responses, and on discriminative and associative reactions among the non-retarded individuals. This seems to hold true for the severely retarded individuals also, who show wide variations in the time taken to respond to a given stimulus. It was assumed that all severely retarded individuals may not progress at the same rate through successive steps in the acquisition of a skill.

7. Many individuals find it difficult to adjust into a vocational training programme directly after being in a classroom situation. Individuals who live in a Group Home tend to develop a routine and a work schedule. They live with other similar individuals and have access to periodic support in activities of daily living, recreation and other leisure time activities. The available opportunities for social interaction promote their self-confidence. It was assumed that the severely mentally retarded individuals living in Group Homes may learn to perform vocational skills relatively easily than those living with their families and attending Day Schools.

These assumptions were used to lay down the objectives for the pilot study first and then for the final study.
The Objectives were:

1. To investigate whether the severely mentally retarded individuals can be trained on a complex vocational task, such as the assembly of a ball point pen.
2. To investigate whether the severely mentally retarded individuals can focus and concentrate on the information presented to them in visual and acoustic forms and learn different steps to a task.
3. To investigate whether the severely mentally retarded individuals can retain and store information for a longer time if the learning material presented to them is well organized (in a sequential order, broken into several steps and vividly presented).
4. To investigate whether the level of I.Q. of the individual in the severe range of mental retardation impaired his/her competency on the job.
5. To investigate whether all severely retarded individuals respond equally well to different modes of learning, such as the visual mode, the auditory mode or the combined visual and auditory modes.
6. To investigate whether all severely retarded individuals progress at the same rate through successive trials in the acquisition of a skill.
7. To investigate whether the severely mentally retarded individuals living in isolated environments, such as the Group
Homes perform on vocational skills better than those living with their families and attending Day Schools.

**Materials**

Training through the visual mode: Picture-cues were used to teach sequential steps of a task. The individual was shown a picture of the first step of the task to be performed and then trained into the sequential use of the pictures to be able to perform the remaining steps of the task. Self-monitoring was accomplished by the individual by checking off the picture, on the completion of the corresponding task.

The picture-cue system had two major components: a picture-cue apparatus and four self-management steps. The picture-cue apparatus consisted of picture sheets, a clipboard and a pen. Pictures representing the task were inserted into the clip-board in their assigned order. The picture-cue apparatus was placed in a convenient place, easily visible and accessible to the individuals. Training consisted of using the picture-cues to teach the sequential steps of the task. Self-monitoring training consisted of demonstrating by the individual how to check off the picture, and how to use the pen on the completion of the task.

**Pilot Study**

The pilot study was conducted to test the feasibility of using the learning strategies for the severely mentally retarded individuals viz., learning through the visual mode,
through the auditory mode and the combined visual and auditory modes in the acquisition of the vocational skill i.e., the assembly of a ball point pen.

In order to select a sample for the pilot study, visits were made to schools for the mentally retarded individuals. These included, School for Vocational Training, Lajpat Nagar, New Delhi, Cheshire Home, New Delhi, the Okhla Centre, Okhla, New Delhi, Amar Jyoti Trust, Trans-Yamuna Colony, New Delhi and 'Sahan - The Federation for the mentally retarded', New Delhi. Among these, the Okhla Centre was selected for conducting the study.

The Okhla centre was a day-school, serving around 250 mentally retarded children and adults. The centre functioned between 9.00 a.m. and 3.00 p.m. with a break in between for lunch. The centre offered educational and other training programmes to individuals based on their level of I.Q. and the ability for skill acquisition. The training programmes were in the areas of activities for daily living and vocations, such as file-board making, chalk making, candle making and box folding. Transport facility was provided by the centre, which ensured consistent presence of individuals at the centre, an essential requirement of the pilot study. Several visits were made to the centre over a period of six months to familiarize oneself with the individuals and establish a rapport with them.
A sample of 20 individuals in the severe range of mental retardation was identified. Individuals with associated handicapping conditions, such as visual or hearing impairment or disabilities of gross and fine motor co-ordination were not included. Severe mental retardation had been determined on the basis of Stanford Binet Intelligence Test administered by psychologists during the past two years. Those in the sample were between 18 and 25 years of age and of both sexes. The range of I.Q. was 25-40, the Mean I.Q. being 30.

**Procedure**

A single subject research design was used to evaluate treatment effects across the different phases of the study. Data were collected using the ABAB design.

The duration of the pilot study was one month. During the training phase, verbal and pictorial demonstrations were given for each part of the task towards its completion (assembled pen). Pictures of all parts of the pen were fixed on a clip-board in a sequential order. For training by the visual mode each individual was asked to pick the part in a sequential order, match it with the corresponding picture and proceed in a look then do sequence. In the auditory mode of training, individuals were not shown any pictures. Instead each part was named and repeated clearly. The individuals picked the named part and proceeded to complete the task in a sequential order. In the initial phase of the study, training
was imparted for five days a week, two hours each day. After a two-week period, the training procedure and data collection were withdrawn for one week. In the fourth and last week, the A and B design was again introduced in order to assess the efficacy of the training strategy.

**Results**

Results showed that 13 individuals (65 percent) responded better to the visual mode of instruction. They were able to see the similarity between the pictures of the pen and the parts of the pen when presented together. Seven individuals (35 percent), having limited attention span did not focus on the pictures of the task presented to them. They engaged in different behaviours. However these individuals could follow the instructions when commands were given verbally. They repeated the commands after the experimenter in an echolalic manner and attempted to do the task in a sequential order.

All the 20 individuals (100 percent) when presented with pictures and simultaneously given verbal commands, completed the task much more easily. Further, 40 percent of the individuals with a lower I.Q. and in the severe range of mental retardation, who initially had difficulty in identifying the different parts of the task, focusing on the task, and in completing the task with successive trials were able to complete the task using a 'look then do' sequence.
They were able to perform the task as well as their peers having a relatively higher I.Q.

**Organisation of the final study**

The final study had the same objectives as in the pilot study.

The following hypotheses were tested:

1. Given sufficient training, the severely mentally retarded individuals will learn to perform a complex vocational task, such as the assembly of a ball point pen.

2. If presented with learning materials in visual and acoustic forms the severely mentally retarded will be able to focus concentrate and learn by absorbing information presented to them.

3. If the learning materials presented to the severely mentally retarded individuals are well organized (in sequential order, broken into several steps and vividly presented) they will be able to retain and store the information presented.

4. The level of I.Q. of the individual in the severe range of mental retardation will not determine one's competency on the job.

5. All severely mentally retarded individuals will respond differentially to different modes of learning, such as the visual mode, the auditory mode, or the combined visual and auditory modes.
6. All severely mentally retarded individuals will not progress at the same rate through successive trials in the acquisition of a skill.

7. Severely mentally retarded individuals living in the Group Homes will perform better on vocational skills than those living with their families and attending day schools.

Research Design

As for the pilot study, for the final research a single subject research design (ABAB) was used to evaluate the treatment effects across the different phases of the study. The use of the ABAB Design permitted examining of the effects of the intervention by alternating the baseline condition (A phase), when no intervention was in effect, with the intervention condition (B Phase). The effects of the intervention were clearly demonstrated when performance improved during the first intervention phase, reverted to or approached original baseline levels of performance when treatment was withdrawn, and improved when treatment was reinstated in the second intervention phase. Kazdin (1982) observed that essentially the data in the separate phases provided information about present performance and predicted the probable level of future performance. By altering experimental conditions in the design, one could use several opportunities of comparing phases and to test if the performance changed due to the intervention.
It is recognized that in this design, variability in the data as a result of variety of influences in the environment and/or within the subjects will be difficult to predict. For example, some remote events may not be identified, but can induce variability in behaviour; such as parting of the subject with a close friend who had shifted to another town or not being able to participate in a desired sport. Within subject problems can be in the nature of a subject having a major seizure disorder which may greatly affect his/her day to day performance on a given task.

Sample

A systematic survey was undertaken of the schools, Institutes and Homes in Delhi, Hyderabad and Bangalore, serving individuals with mental retardation. The schools visited in Delhi were:

'Sahan' - Federation for the mentally retarded, New Delhi.

'Anchal' - New Delhi.
School for the mentally retarded - Anand Vihar, New Delhi.
YMCA - New Delhi.
SMRC - School for the Mentally Retarded Children - New Delhi.
Balwant Rai Mehta Vidya Bhavan - New Delhi.
Bharatiya Vidya Bhavan - New Delhi.
Tamanna - New Delhi.
Muskan - New Delhi, and
Cheshire Home - New Delhi.

In Hyderabad:

The National Institute for the Mentally Handicapped was visited, and
In Bangalore:

NIMHANS - National Institute of Mental Health and Neuro Sciences, Bangalore.
Association for the Mentally Handicapped, Bangalore
AshaLaya - Gedlahalli Group Home, Bangalore.
Asha Niketan - Bannerghatta, Bangalore.
Rahasya Trust - Bangalore.
Opportunity Centre - Baldwin's School, Bangalore.
School for the Mentally Retarded - Sophia's School, Bangalore.
Vocational Centre for Mentally Retarded - Bangalore.
Asha Kiran - Bangalore.
Home for the Mentally Retarded and Mentally Ill - run by the Dept. of Social Welfare, Bangalore, and,
Organization of Parents of Mentally Retarded Children, Bangalore.

Out of the above Schools, Institutes and Homes in the three major cities serving the needs of individuals with mental retardation, a sifting process was undertaken to eliminate those which did not fit into the research scheme, in terms of the types of individuals served, the type and quality of services provided and the age-groups. It appeared that -

1. The Schools were set up with the intent of serving mainly the children and young adults.
2. Individuals above 18 years of age were considered only in vocational training programmes, which were few in number and were also designed to accommodate the mildly and moderately mentally retarded individuals.
3. Severely mentally retarded individuals were considered 'difficult to deal with', because of their set patterns of
behaviours and lack of training in skill areas of eating, dressing and toilet-use.

4. Lack of personnel. Professionally trained and qualified special education teachers and other professionals such as a) Behaviour Analyst, b) Clinical Psychologist, c) Recreation Therapist, d) Physical and Occupational Therapist, e) Counsellors and Case-managers were needed to function as an inter-disciplinary team to assess and formulate programmes to meet the needs of individuals with mental retardation, but were not there.

5. Paucity of funds. Adequate funding was needed to design the suitable educational and vocational training programmes, and a basic infrastructure was required to execute these programmes. In the absence of both, most facilities were operating on a tight budget and with a minimum number of professionally trained staff.

Given the above constraints, the selected sample got restricted to Delhi and Bangalore. The sample became further restricted by the need to choose individuals (1) in the severe range of mental retardation, (2) In the 18-35 age group, (3) Free of associating handicapping conditions, such as visual and hearing disability and impairment in gross and fine motor co-ordination, 4) Free of health problems, such as having frequent seizures and, 5) Not having behavioural problems,
such as being aggressive and disruptive towards others and abusive towards self.

Thus, a total of 50 individuals were selected from the two cities i.e., Delhi and Bangalore. They comprised two groups and are called Stratum I and Stratum II here.

Individuals in Stratum I were living in residential facilities (Group Homes) and individuals in Stratum II were living with their families and attending day schools. Stratum I individuals lived as near normal life as possible and were trained and supervised in activities of daily living and in some vocational areas, such as packaging, pasting labels etc. These individuals followed a daily routine and were assisted in these activities during the day. Some of them were visited by their families and they also got the opportunity to go home on special occasions. The majority of them, however, did not have any family involvement.

Individuals in stratum II were living with their families at home and attended day-schools. The day-schools provided them with some academic instruction and training in some vocations, such as box folding, file board making, candle making etc. The amount of time spent in the day-schools was close to 6 hours during which they were assisted to learn and acquire skills in above areas.
Variables

1. Subjects I.Q.: All subjects were in the severe range of mental retardation, I.Q. range being 25-40.

2. Acquisition of skill on the task: This was measured by the number of correct responses on each trial, after the introduction of intervention. Four trials comprised one unit. Four units i.e., 16 trials were administered to each individual using visual, auditory and the combined modes. Self-monitoring, defined as the undertaking of a designated task in the assigned sequence without a supervisory prompt or directive was used as a check on the task performance. The individuals were required to complete four self-managed steps to receive credit for an independent completion. This included (a) return to the picture-cues after completing a task; (b) mark off the picture corresponding to that task; (c) touch the picture of the next task; and (d) begin that task.

Materials

The materials used were the same as in the pilot study.

Procedure

The first phase consisted of training through the combined visual and auditory modes. In this phase of training, the total approach was used to train the individuals for the vocational task of assembling the ball point pen. The individual was shown a picture of each part of the pen and
each part was named clearly in the sequential order. The individual was expected to pick the correct part and match the part with the corresponding picture on the clipboard and then in a sequential order assemble a complete pen. The trainer flipped the pages of the pictures on the clipboard. A total of 20 trials were given towards achieving accuracy on the task. Four trials constituted 1 (one) unit. Five units were administered on any given day in order to assess the progression or regression on the task.

For the purpose of quantification each correct response was identified with a check mark and was assigned a score of 1 (one) and an incorrect response was assigned a 0 (zero). It was found that a maximum of 16 trials would be the ideal condition for testing.

Testing

Following training, the individuals were tested through the visual and auditory modes for the acquisition of the skill to establish which of these modes or the combination of modes facilitated learning and acquisition of the task.

Acquisition of task through the visual mode: In this phase of testing, the individual was shown only pictures of each part of the pen in a sequential order. The subject was expected to pick the part, match the part with the corresponding picture, and work in a sequential order to complete the task. The trainer flipped the picture on the
clipboard. A total of 16 trials were administered and before the beginning of each trial the individual was explained the procedure involved.

Acquisition of task through the auditory mode: In this phase of testing clear instructions were given to the individual with respect to the task to be performed. Each part of the pen was named and repeated to ensure that the individual was attentive and heard about the named part. The parts were named in sequential order. Careful monitoring was done of the attention given by the individual to the parts of the pen in the sequential order. The instructions were given in the language familiar to the individual. A total of 16 trials were administered, and as in the preceding phase before the beginning of each trial the individual was explained the procedure involved.

Acquisition of skill through visual and auditory modes combined: In this phase of testing, pictures of each part of pen were presented, and the parts were also named clearly in a sequential order. The students were expected to attend to the part named, pick the part, match the part with the corresponding picture of the part and assemble the pen in a sequential order following a 'look then do' sequence. The trainer flipped the pictures on the clip-board.

'Look then Do' Sequence with Self-Monitoring: In this phase, the individual completed the task following a 'look
then do' sequence. Each part of the pen was picked in a sequential order by the individual and matched with the corresponding picture on the clipboard. After assembling the part, the individual checked the picture for completion, flipped it, picked the next part and went on to the next picture. No verbal commands were given. All the steps were completed in a sequential order. Using this procedure of training, an alternating treatment was implemented to evaluate the effectiveness of two interventions for improving the acquisition of the vocational task.

Qualitative Data

Behavioural observations of individuals with severe mental retardation were made and interviews with some of the parents, teachers of Day Schools and Staff of Group Homes were conducted. Information about the Day Schools included the setting, classroom management, students' participation in the class and school activities. The information about the Group Homes included the residential facilities given to the residents, the in-house and out-door activities, visits and involvement of the families of the residents.

Data Analysis

Data were analysed by using both the quantitative and qualitative methods. Data on training effects were analysed by using,

(a) percentages
Qualitative data had been content analysed and the information integrated with that obtained through behavioural observations, and interviews with the respondents.

Conclusions:

The following conclusions were drawn:

1. The severely mentally retarded do have the potential to learn a vocational task. This was evidenced when at the end of the final training sequence i.e., 'look then do' with self monitoring, most of the individuals belonging to the two strataums were able to perform the task. Repeated trials and practice on the task enabled the individuals to learn the task. Thorndike's laws of learning namely, the principles of frequency, recency and vividness were used to teach the task, which enabled the individuals to learn and perform the task with good accuracy, despite severe cognitive impairment.

2. Since the individuals with severe mental retardation are deficient in areas of focalization and concentration, the learning materials presented in visual and acoustic forms facilitated the absorption of the information. The presentation of the task, in the form of attractive pictures provided them stimulating and concrete visual images which helped to draw their attention and sustain it. They were able
to focus on the pictures of the task which served as visual stimulus, and guide their behaviour on the task. The pictures, in essence, provided the cues to proceed with the different steps in a sequential order towards completion of the task.

Similarly the presentation of the task using clear and concrete language with simple words provided them auditory cues to understand the task and work on it. Due to deficits in attention, they could not focus on the task. Therefore, when the parts of the task were clearly named, it provided them the cues to pick the correct part in the sequential order and proceed towards completing the task.

Norman's (1969) observation that the human mind as a process of information responded primarily to visual, meaningful information in acoustic and visual forms seemed to hold true for severely retarded individuals also. Due to impaired cognitive functioning they were unable to process and absorb the information that was presented. The use of the visual and acoustic modes to present the learning materials facilitated the learning and absorption of the information, resulting in the acquisition of the task.

3. Systematically organised material presented to the severely mentally retarded individuals does facilitate the learning process. This was in line with what Spitz (1966) maintained, that since individuals with mental retardation
were deficient in their ability to conceptualize, they were unable to store and retrieve materials. They needed the materials presented to them to be well organized for optimal learning to occur. The presenting of the task in a sequential order, broken into several steps, and vividly would not only maximise the learning for individuals with severe mental retardation but also facilitate the retention and retrieval of steps involved in the learnt task.

4. Individuals having a low IQ in the severe range of mental retardation can achieve the same level of competence as individuals having a relatively higher IQ. This was demonstrated by the repeated trials given on the task selected for training. Initially, individuals with a lower IQ had difficulty in identifying the different parts of the pen, in focusing on the task and completing the task. However, successive trials on the task enabled them to perform as well as their peers, who were in a relatively higher IQ. Barroff (1986) also maintained that the level of IQ may not be the determinant of competency on the job. Competency may be achieved through repeated trials and exercise on the job. He further added that the focus should not be on the initial level of performance, but on the degree to which that level can be raised following training.

5. All the severely retarded individuals did not respond equally well to different modes of learning i.e., the visual
mode, the auditory mode or the combined visual and auditory modes. For some individuals pictures provided a more effective stimuli than words and pictorial presentation of material as antecedent cues facilitated learning. The cues established a 'look then do' sequence that permitted these individuals to have greater control on task behaviour. Some others who preferred the auditory mode responded relatively easily to auditory cues. However, when both modes were presented together, it facilitated learning for all the individuals. This was also shown by studies conducted on the modality learning of individuals with mental retardation through the visual mode (Evans, 1970), the auditory mode (Gerjuoy and Winters, 1970) and through a combined visual-auditory mode (McConkey and Green, 1973).

6. All individuals in the severe range of mental retardation do not progress at the same rate. They showed wide variations in the time taken to respond to a given stimulus. Cattell (1986) in his experiments on 'reaction time' recorded differences in time intervals between stimulus and response of persons, owing to differences in sensory and motor responses and differences between discriminative and associative reactions. The observations made by Cattell seemed to hold true for the severely retarded individuals.

7. Severely mentally retarded individuals living in Group Homes performed better on the task than those living with
their families and attending Day Schools. This was evidenced as Group Home individuals consistently demonstrated more gains and better performance due to having structure in their lives and discipline in their routine. As they lived with other similar individuals they also had the opportunity for social interaction, which in turn promoted their self confidence. In contrast individuals attending Day Schools and living with their families lacked discipline, and owing to several distractions in the environment were unable to develop for themselves a routine and a work schedule. This reflected adversely on their motivation and performance on the task. Also, Kurani (1990) maintained that the mentally retarded individuals find it difficult to adjust into the vocational rehabilitation programmes because of their low adjustment potentials and physical capabilities. Pre-vocational training helps in developing the individual's personality and ability for adjustment.

**Implications**

The following implications emerge from the research.

**Training**

Two types of training is required for successful implementation of the programmes for individuals with mental retardation.

1. Training of the mentally retarded individuals, and
2. Training of personnel working in the field of mental retardation.

1. Training of Mentally Retarded Individuals

Severely mentally retarded individuals need powerful and systematic instructional techniques for effective acquisition and performance on a vocational task. The task chosen for training needs to be structured in a well organised manner that would facilitate learning of the task.

It is important for individuals with mental retardation to be helped to grow, without stigma and ridicule, which mark them out as different from other members in the community. Rehabilitation training programmes should aim to provide for independence in self care, appropriate social behaviour, while the vocational skills provide the necessary tools towards independent functioning in the community-life and opportunities for gainful employment. Vocational training, in essence, prepares the individual not only for competitive employment but also for effective community participation and social adjustment. It is, therefore, vital to devise programmes based on the assets and deficits of such individuals which would equip them with the necessary skills to cope with the problems and enable them to better integrate and participate in their family and community-life.
2. Training of Personnel

The training of personnel in the field of mental retardation is vital to the success of the programmes aimed at education and rehabilitation of individuals with mental retardation. Professional training and technical knowledge in the field is required in order to be able to execute the programmes with competency. Training programmes intended to train personnel in the field, therefore, need to emphasise the competencies for effective job performance, the comprehending of the special nature of the job, and the ability to perform the tasks of their work role.

It has often been observed that the staff appointed to work with mentally retarded individuals lack prior experience or exposure to such individuals. The staff work only till they can find a job of their liking. One of the most important characteristic of the staff working in the field of mental retardation is commitment and dedication to one’s job. Other relevant characteristics are the ability to establish a rapport with such individuals, to be able to handle crisis situations, and to work as a part of an interdisciplinary team.

The nature of the job required an orientation to the job to be able to make an effective contribution to it. Trainees must be made acquainted with the duties and the responsibilities of the job. The trainee's understanding of
the job and good practice required the development of necessary attitudes and values towards the mentally retarded individuals themselves.

Skill training is another area that needs to be focussed on in the trainee's training programme. Supervised training in technical skills to be imparted to mentally retarded individuals as part of their vocational training programme needed to train the individuals in interpersonal skills, problem solving etc., and above all the skill to meet the challenges on the job. Additionally, 'on the job training', such as working with the individuals on Group Homes/Day Schools would provide 'hands on' experience and eliminate some of the fears and anxieties related to the job.

Finally training is needed to maintaining records, writing reports etc. Ability to record details of incidents of aggressive/assaultive behaviour or self abusive behaviour, to record the progression or regression of the individuals in various skills is essential, since such information is a valuable source of reference in assessing the performance of the individuals in various domains.

It is hoped that the inclusion of these aspects in the 'personnel training', programme would equip them with knowledge and professional competency.
Research

1. The present research focused on the acquisition of a vocational task that used three learning modes viz., the visual, the auditory and the combined auditory and visual mode, and reported good success. It implied that the learning can also be acquired through other senses, such as the tactile mode (by touching items, hot and cold, rough and smooth), through smell (such as smelling food items, clean and dirty items), through sounds (such as hearing noises in the environment). Research needs to test the efficacy of combining these learning modes, and to what extent these modes can be effectively used to train severely mentally retarded individuals in the acquisition of different skills.

2. It was found that even with a low IQ, competency may be achieved through repeated trials and exercise on the job. It needs to be investigated whether other variables, such as exposure to different environments, cultural background, language barriers would affect the competency of the individual on the job. Also, the role of socio-economic status, level of literacy of parents/caregivers, family ecology, adaptation of families and siblings involvement in the life of the retarded individual need to be investigated.

3. The severely mentally retarded individuals varied in their rate of progress through successive trials, when no tangible reinforcers were used, except the intermittent verbal
praise for correct responses. It needs to be investigated if reinforcers would affect the level of performance on the task and whether the effect of such reinforcers can be sustained by individuals with severe mental retardation.

4. It appeared that the individuals with severe mental retardation need someone to provide the control in terms of guidance, direction and corrective feedback for their activities of daily living. It needs to be investigated whether the family could be trained to create a simulated environment of the Group Home which might be conducive to their growth and functioning.

Policy

As a first step, since no systematic survey exists on a national level indicating the nature and magnitude of the different disability groups viz., orthopaedically handicapped, visually handicapped and blind, hearing impaired and deaf, mentally retarded and individuals with other handicapping conditions, the Census should include such a survey. The 1981 survey excluded individuals with mental retardation from the list. Subsequent small surveys estimated the number of mentally retarded individuals in certain select areas, but these failed to reflect the actual problem.

The Presidential Address to the Joint Parliament Session on 13 February 1995 indicated that while new measures are under consideration of the Government for the protection of
the Scheduled Caste, Scheduled Tribes and the Disabled to provide equal opportunities to the handicapped in areas like education, vocational training and employment placement, the individuals with mental retardation are to be provided with a trust for their 'welfare and protection'.

A bill has been introduced in Parliament called Persons With Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995, which covers different categories of disabilities including individuals with mental retardation. In the bill, the AAMD definition of mental retardation has been used as the criteria for eligibility of individuals with mental retardation. According to the Act "in order to be eligible for any concessions/benefits/facilities under the Act, the minimum degree of disability shall be not less than 40 percent." For individuals with mental retardation, it is quite difficult to categorize individuals who would be eligible for concessions and benefits and those who would not be eligible. The Act needs to have more teeth to be effective.

In a developing country like India factors such as poverty, illiteracy, prevailing social norms etc. play an even significant role in determining the quality of life and services for the mentally retarded individuals. A positive National Policy should be formulated that would recognize the
needs of mentally retarded individuals and provide supportive services to them. The Government of India has addressed the issue by setting up a National Institute for the Mentally Handicapped (NIMH) at Secunderabad in 1984, which was to serve as an apex organization for providing suitable models of service, delivery, manpower development and for undertaking research in areas of early identification, training and rehabilitation of such individuals. Considering the magnitude of the problem, such efforts though laudable touch only the fringe of the problem.

The policy makers, administrators and social welfare personnel should make concerted and dedicated efforts to provide services encompassing all the critical aspects of rehabilitation of individuals with mental retardation. They should take note of the nature and distribution of available services in the country. A directory of services brought out by NIMH at the end of 1992 listed 485 institutions serving the needs of mentally retarded individuals spread over 19 states and 4 union territories. These need improvement as well as extension. More special training centres, Day Care Centres, Group Homes, Vocational Rehabilitation Centres and sheltered workshops. At present this need is met to some extent by voluntary organization working in this field. A large number of children and adults who are mentally retarded do not receive any service outside
their homes and are looked after by their families with few resources at hand. Parents and other caregivers need support services to meet the needs of such an individual. Specific services, such as financial support towards medical bills and other costs of maintenance, counselling and training for parents and siblings, should be provided on an ongoing basis.

Individuals with mental retardation require professional services of an interdisciplinary team consisting of a clinical psychologist, psychiatrist, special education teachers, speech therapist, occupational therapist, physiotherapist etc. Periodic evaluations and tests need to be conducted to assess their cognitive, emotional and social development or retardation.

Creating Public Awareness

Public awareness about different disabilities and mental retardation in particular has been dismally low. The attitude of the society tends to oscillate between pity or tolerance at one end to ignorance and indifference at the other. In order to change the attitude of the society and dispel the social 'myths' a systematic community awareness programme through dissemination of information needs to be undertaken. The focus should be on disseminating pertinent information using the multi media films, radio, television, seminars, lectures etc.
Curriculum Design

The curriculum designed to teach/train the mentally retarded individuals should match their potential for learning. The goal should be to maximise their productivity, participation and independence in their work environment, family life and in the community in which they live, as they are deficient in areas of attention, memory, retention, motivation, in addition to the general deficits.

Limitations

1. The sample for the present research consisted of only 50 adults with severe mental retardation. Despite an extensive survey of the schools, institutes and homes not many individuals with severe mental retardation could be identified, as several of these places did not admit them for overt/covert reasons. A few Homes admitting them often provided custodial care.

2. Schools funded by the state and local administration were visited, but it was difficult to get deep into their programmes. A request for a brochure or any type of printed materials providing information about the organization and its programmes, received reluctance of the staff.

3. The teachers and training instructors of the mentally retarded individuals are working more for 'love for the job' than for monetary rewards. While almost all of them were dedicated, they varied widely in age, socio-economic status,
educational qualifications, teaching training experience, etc. Thus it was not possible to make any comparisons of teacher characteristics and/or teacher-student behaviours.

4. Lack of involvement of parents/caregivers. The parents rarely visited their offspring in Group Homes. In Day Schools their visits were restricted to Parent-Teacher meetings. Moreover it was mostly the mother who was available for any questions, comments or suggestions. Despite the acknowledged importance of the family, the information about the family as a unit and the various relationships could not be accessed.

5. Paucity of research in general and specifically on the training programmes for the adults limited the available references.

Suggestions for Future Research

1. Innovative and Scientific research needs to be conducted in the field of mental retardation. Such research should be given high priority. An integrated approach should be used, based on the recent advances in behavioural sciences oriented towards their integration and rehabilitation. Continuing research is therefore required to delineate the most effective methods for a balanced approach to the problems of mental retardation.
2. Research on training and rehabilitation with focus on appropriate job opportunities in competitive employment for adults with severe mental retardation should be encouraged. Despite the provision of reservation of jobs through legislation, the prospects of employment of individuals with mental retardation are dismally low. With training in different vocational skills and coordinated job placement efforts, individuals with mental retardation including severely retarded may be able to enter competitive employment settings with varied levels of success. This need to be probed, however.

3. Research on the effects of cultural deprivation might highlight the additional factors responsible for cognitive impairment. Lack of stimulating environment, lack of appropriate communication with non-retarded individuals, inadequate sensory experiences and environmental factors associated with poverty and deprivation do affect the cognitive and social development of the individual.

4. Researchers should also focus on strategies of effective parent/care giver participation in the lives of the retarded individuals and its effect on the emotional and psychological well being of the individuals. Behaviour problems and emotional disturbances of individuals should be identified and effectively dealt with through active manipulation of the possible factors.

5. Research on training methods and appropriate special education programmes would help in the development of suitable curricula to meet the needs and facilitate the optimal learning of individuals with mental retardation.