CHAPTER IX

SUMMARY AND CONCLUSIONS
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Early childhood period is a crucial period in the growth and development of an individual. During this period the growth and development is very rapid. Damage or impoverishment suffered at this stage is likely to be irreparable. The child becomes what he has to become during the first four or five years (Freud, 1936). During this age particular virtues and vices develop slowly but clearly and make themselves felt (Erickson, 1964).

Case studies of maladjusted children from pre-school years into high school or college have revealed that most of them were so poorly adjusted as young children that they neither belonged to any group nor had any friends. These children were regarded by their parents as 'problem' children (Crumbley and Blumenthal, 1973; Gagne, 1971; Smith et al., 1972). Potential delinquents could be identified as early as two or three years of age by their anti-social behaviour (Glueck, 1966).

Pre-school period demands greatest care from both i.e., the parents and the community. In the absence of such care, children might suffer from lack of socialization, illiteracy, and unhygienic living conditions especially in rural areas and urban slums. This may further lead the child to become a delinquent or acquire aggression and other behaviour problems. In India, majority of child population live in rural, tribal, and urban slum areas. Due to unhealthy and unhygienic atmosphere
at home, many children become victims of various behaviour problems such as hyperactivity, aggression, norm-violation, non compliance, social withdrawal, disruptive behaviour etc. Of these problems, aggressive behaviour is the most troublesome problem and is of key concern for parents and teachers.

Aggression is intended to cause injury or pain (physical or psychological) to others or to self, and to destroy property. Aggression may include hitting, biting, scratching, teasing, name calling, derogatory comments, and a variety of other specific behaviours. Children may direct aggression towards others or towards themselves. Aggression can be reduced or eliminated through various behaviour modification techniques such as positive reinforcement procedures, extinction procedures, and punishment procedures.

A close analysis of review of related literature (Chapter III) shows that various behaviour modification techniques mentioned above, have been employed abroad to reduce aggressive behaviour with mixed results. A very few studies have been conducted to see their comparative effectiveness. To the best of the knowledge of the investigator, no such study has been conducted in India. There is a dire necessity of such research work in India. Parents and community both are confronted with this most troublesome behaviour problem of aggression. If this problem is dealt with well in time,
e.g., during pre-school years, children can be saved from becoming delinquents or problem children.

Thus, comprehending the seriousness of aggressive behaviour found in the pre-school children of slum areas, importance of early childhood years, necessity of early intervention to eliminate or at least reduce aggression, lack of intervention programme in the educational settings to deal with this problem, efficacy of behaviour modification techniques tried out abroad, lack of research work on the comparative efficacy of these behaviour modification techniques, and lack of such research work in Indian conditions to improve the lot of a large number of children living in slum areas, the investigator was inspired to take up the present study. Through the present study, the investigator wanted to see the effectiveness of DRO, DRI, time out (TO), combinations of DRO and TO, and of DRI and TO on aggressive behaviour of pre-school children in Indian conditions.

STATEMENT OF THE PROBLEM

The problem under study reads as follows:

"Effect of Behaviour Modification Techniques on Aggressive Pre-School Children of Anganwadi Centres in Chandigarh".

OBJECTIVES

Main objectives of the present study were:

1) To study and classify the characteristic behaviour problems of pre-school children coming to anganwadis.
2) To apply various behaviour modification techniques to reduce or eliminate aggressive behaviour.

3) To involve existing human resources such as anganwadi workers in dealing with aggression of pre-school children.

4) To compare the effectiveness of various behaviour modification techniques for reducing or eliminating aggressive behaviour.

5) To see the side effects of reduction in aggression on other behaviour problems and intelligence of pre-school children.

DELIMITATIONS OF THE STUDY

1) Pre-school children with age-range of 3 to 6 years, and belonging to different anganwadis were included in this study.

2) Children with only behaviour problem of aggression were provided treatment.

3) Only DRO, DRI, TO, combinations of DRO and TO and of DRI and TO were used to modify aggressive behaviour of pre-school children.

DESIGN OF THE STUDY

A variety of experimental designs are used in behaviour modification studies to determine whether a given intervention is responsible for a behaviour change. In the present study,
control group experimental design on the lines of Craighead et al. (1976) was used. The control group experimental design includes at least two groups, whose subjects have been randomly assigned. In the present study, there were six groups. Subjects were randomly assigned to various treatment groups and control group. All the six groups were assessed before and after treatment on the criterion measure of aggression and other behaviour problems. Control group was given no treatment but was given pre- and post-test on the criterion measure of aggression and other behaviour problems.

In the present study, differential reinforcement of other behaviour (DRO), differential reinforcement of incompatible behaviour (DRI), time out (TO), combinations of DRO and TO, and DRI and TO as behaviour modification techniques served as independent variables and their effectiveness was studied on the criterion variable of reduction or elimination of aggression in children. Variables of intelligence and socio-economic status were taken as controls. All the experimental conditions were carried out during the play period.

SAMPLE

Multistaged randomized sampling technique was used in the present study. The details are:

Total Sample (Stage I): Director and Child Development Project Officer (CDPO) of Integrated Child Development Services (ICDS) were contacted and the list of existing 200 ICDS centres of
Chandigarh was collected from the CDPO. Out of these 200 ICDS centres, 30 AWs were randomly selected for the purpose of data collection.

Initial Sample (Stage II): During the second stage, 10 children from each of 30 AWs were called for and Behaviour Problems Inventory (BPI) by Muralidharan (1969) was administered to them to assess their behaviour problems. Children fulfilling the following criteria were included in the initial sample with a purpose of assessing their behaviour problems:

1) Pre-school children with an age-range of 3 to 6 years.

2) Children were coming to anganwadi centres in Chandigarh.

Out of the surveyed 300 children, 243 children (152 male and 91 female) were found eligible. Hence, only 243 pre-school children were included in the initial sample.

Final Sample (Stage III): At the third and the final stage, on the basis of BPI out of the total 243 pre-school children who constituted the initial sample, 36 children were identified as aggressive children. These 36 identified pre-school aggressive children were administered Developmental Screening Test (DST) by Bharathraj (1977), Vineland Social Maturity Scale (VSMS) by Malin (1965), and Socio-Economic Status (SES) Scale by Srivastava (1978). Frequency of aggressive responses was recorded in the Observation Schedule developed by the investigator. On the basis of these tests, children who
fulfilled the following criteria besides the above mentioned criteria for the initial sample, were included in the final sample:

1) Children who had scores of 30 and above on aggressive behaviour out of the total score of 48 from BPI were taken up.

2) Besides, children who had an average frequency of aggressive responses between 35 and 45 per 30-minutes of play period during the baseline period of two weeks were included.

3) Lastly, children who had $DQ_{comb}$ between 90 and 110 on the basis of DST and VSMS tests were finally selected.

4) Also, all children were from low SES families with scores between 0 to 15 on Srivastava's SES scale.

On the basis of above mentioned criteria, out of 36 pre-school children, only 30 eligible children were selected for the final sample. Of these 30 selected children, five children were randomly assigned to each of the five experimental groups and one control group.

**Hypotheses**

After a close perusal of related literature and objectives of the present study, the following hypotheses were formulated:

1. Biological, social, personal – historic factors, and intra-personal relations within the family are related to different behaviour problems.
2. Different behaviour problems are interrelated.

3. Behaviour modification techniques will be effective in reducing or eliminating aggressive behaviour of pre-school children.

4. Different behaviour modification techniques will differentially reduce or eliminate aggressive behaviour.

5. Reduction in aggressive behaviour may result in the reduction of other behaviour problems.

6. Reduction in aggressive behaviour may result in DQ gains.

**TOOLS USED**

To test the above mentioned hypotheses, the following tools were used:

5. Observation Schedule developed by the investigator to record the changes in aggressive behaviour brought about by five different behaviour modification techniques.

**PROCEDURE OF DATA COLLECTION**

The data of the present study were collected in the following four phases:
Phase I - Pre-test:

In the first phase of data collection, BPI was administered individually by the investigator on the parents of all 243 pre-school children with the age-range of 3 to 6 years coming to AWS in Chandigarh. Children who scored 30 and above out of maximum possible score of 48 on aggressive behaviour were included in the final sample.

Phase II - Baseline Period

In Phase II intelligence tests and socio-economic status scale were administered to the selected 36 aggressive pre-school children coming to anganwadi centres.

Developmental Screening Test (DST) and Vineland Social Maturity Scale (VSMS) were administered individually by the investigator on all the 36 aggressive pre-school children with parental consent and their help. DQ obtained from DST, and SQ obtained from VSMS were called as DQ₁ and DQ₂ respectively. DQcomb of each subject was computed by averaging DQ₁ and DQ₂. On the basis of SES and these intelligence tests, 30 eligible aggressive pre-school children were included in the final study.

After having selected aggression as the target behaviour, its strength was recorded before intervention was instituted. The strength of aggressive behaviour was recorded by measuring the frequency of occurrence of events of aggressive responses by the investigator over a period of 2 weeks (baseline period). The observations were recorded twice a week.
Phase III - Intervention Period

Phase III consisted of intervention/treatment period. Intervention was provided to 25 pre-school aggressive children coming to anganwadi centres in Chandigarh through various behaviour modification techniques. These techniques included differential reinforcement of other behaviour (DRO), differential reinforcement of incompatible behaviour (DRI), time out (TO), combination of DRO and TO, and of DRI and TO. Five subjects were assigned to each of the five treatment groups. Five subjects were taken up in the control group.

Strength of the target behaviour i.e., aggression was measured twice a week by recording each occurrence of aggressive acts/events. The treatment period lasted for 4 weeks. Thus, eight observations were recorded during the treatment period.

Phase IV - Post-test

Phase IV consisted of readministration of Behaviour Problems Inventory, Developmental Screening Test, and Vineland Social Maturity Scale. Behaviour Problems Inventory was readministered to check the scores of aggressive behaviour as well as other behaviour problems in order to see the effectiveness of various behaviour modification techniques. Intelligence tests were re-administered to find out if there was any significant gain in DQ_comb as a result of treatment provided to the subjects through various behaviour modification techniques.
STATISTICAL ANALYSIS

Various statistical techniques were employed for testing research hypotheses. The raw scores of DST and VSMS were converted into $DQ_1$ and $DQ_2$ respectively so as to obtain average of combined DQs. Analysis of variance was worked out to find out variance (difference) between various treatment techniques. Further $t$-test was applied to different treatment groups to test the efficacy of various behaviour modification techniques. Also, biserial correlations and product-moment correlations were worked out to see the relatedness of different behaviour problems and factors affecting them. In addition, graphic representation was done wherever necessary.

RESULTS

The results obtained in the present study can be categorised as follows:

Prevalence of Behaviour Problems:

- 1.65 per cent children of the total group were found to have 61.7 per cent sleeping difficulties i.e., only 1.65 per cent children scored in sleeping difficulties between 16 and 20 with the average score of 18 out of the total score of 30.

- 72.5 per cent eating difficulties were recorded in 5.76 per cent of the total group of 243 children.
Out of the total 243 children, 1.23 per cent children were found having an average of 45.6 per cent eating difficulties. None was reported to have above 45.6 per cent of this problem.

93.4 per cent children were found to have below 50 per cent and 6.6 per cent children above 50 per cent of sense of self adequacy-inadequacy. Only 0.82 per cent children of the total group were recorded to have 67.3 per cent of this problem.

14.81 per cent children of the total group of 243 children were recorded of having above 50 per cent aggressive behaviour.

7.41 per cent children of the total group were found to have above 50 per cent unsocial behaviour.

Approximately 18.93 per cent children of the total group of 243 children were reported to have non-compliant behaviour on an average of 50 per cent and above.

Average percentage of delinquent behaviour ranged between 4.7 and 48.4 per cent. None was reported to have delinquent related behaviour above 48.4 per cent.

Relatedness of Different Behaviour Problems and Factors Affecting Them:

Significant positive correlations were recorded between the age of the child and different behaviour problems such as sleeping difficulties, eating difficulties, difficult habits, sense of self adequacy-inadequacy,
aggressive behaviour and non compliant behaviour. Similar results were obtained between the age of the father and the above mentioned different behaviour problems.

- Positive and significant correlation was found between the income of the parents and the unsocial behaviour. Significant positive correlations were also observed between the parents' age at marriage and different behaviour problems such as sleeping difficulties, eating difficulties, difficult habits, sense of self adequacy-inadequacy, aggressive behaviour, and non compliant behaviour.

- Negative but significant correlations were recorded between the mother's age at the time of child birth and different behaviour problems, namely, sleeping difficulties, difficult habits, sense of self adequacy-inadequacy, and non compliant behaviour.

- Age of the younger child, age when the child stopped bottle feeding, and age when the child started talking were reported to be positively correlated with sleeping difficulties, eating difficulties, difficult habits, sense of self adequacy-inadequacy, aggressive behaviour, and non compliant behaviour.

- Aggressive behaviour was found to be positively and significantly correlated with the age of child, father's present age, both parents age at marriage, age difference from the younger child, age when the child stopped bottle feeding, age when the child started walking and talking,
sex of the child, pre-mature birth, management of the child, and parental preferences.

- Sex of the child was found to be positively correlated with eating difficulties, and aggressive behaviour and it was found negatively correlated with sense of self adequacy-inadequacy, and unsocial behaviour. Likewise, pre-mature birth was reported to be positively correlated with eating difficulties, difficult habits, sense of self adequacy-inadequacy, and aggressive behaviour. However, it was negatively correlated with unsocial behaviour.

- Type of delivery (birth) was negatively but significantly correlated with sleeping difficulties, and unsocial behaviour. Management of the child was positively correlated with sense of self adequacy-inadequacy, and aggressive behaviour and was negatively correlated with non compliant behaviour and delinquent behaviour.

- Positive correlations were observed between parental preferences and behaviour problems, namely, difficult habits, aggressive behaviour, non compliant behaviour, and delinquent related behaviour.

**Interrelatedness of Different Behaviour Problems:**

- Positive correlations were observed among different behaviour problems.

- Aggressive behaviour was found to be positively and significantly correlated with sleeping difficulties,
eating difficulties, difficult habits, non compliant behaviour, and delinquent related behaviour. Negative and insignificant correlations were observed between aggressive behaviour and unsocial behaviour as well as sense of self adequacy-inadequacy.

**Effectiveness of Various Behaviour Modification Techniques:**

- Average differences between pre- and post-test scores on aggression with regard to different EGs i.e., EG₁, EG₂, EG₃, EG₄, and EG₅ were found 25.4, 28.4, 31.2, 33.4 and 31.0 respectively.

- Average frequencies of occurrence of aggressive behaviour recorded during the last observations of different EGs i.e., EG₁, EG₂, EG₃, EG₄, and EG₅ were 11.6, 6.8, again 6.8, 0, and 0.4 respectively.

- All the obtained t-values between pre- and post-test scores on aggression, and between different EGs and CG on the basis of post-test scores as well as on the basis of last observations recorded in the treatment period were found significant much beyond .01 level of confidence. These significant t-values indicate the effectiveness of various behaviour modification techniques.

**Effect of Reduction in Aggression on Other Behaviour Problems and Intelligence:**

Significant t-values were found between the pre- and post-test scores of difficult habits, sense of self adequacy-inadequacy, unsocial behaviour, non compliant behaviour, and delinquent related behaviour.
Each subject of EG₁, EG₂, EG₃, EG₄, and EG₅ gained an average of 6.8, 4.5, 3.34, 5.32, and 5.26 $D_{Q\text{comb}}$ respectively during the treatment period. However, each subject of the control group lost an average of 0.4 $D_{Q\text{comb}}$ during this period.

Significant t-values were obtained between the differences of pre- and post-tests for $D_{Q\text{comb}}$ of all EGs and between different EGs and CG on the basis of post-test scores.

**CONCLUSIONS**

In the light of findings of the present study, the following major conclusions can be drawn:

With regard to the prevalence of behaviour problems, aggressive behaviour is more prevalent in pre-school children with age-range of 3 to 6 years as compared to other behaviour problems. Eating difficulties and aggressive behaviour are found higher in boys and unsocial behaviour, and sense of self adequacy-inadequacy are higher in girls.

As far as relatedness of different behaviour problems to various factors affecting them is concerned, children belonging to low income families have more social difficulties as compared to their counterparts. Children whose parents married early have lesser behaviour problems than those who married late. Likewise, children born to younger mothers have higher sleeping difficulties, difficult habits, sense
of self adequacy-inadequacy, and noncompliant behaviour than those who are born to old mothers. Further, children who have smaller age difference from their younger siblings have greater behaviour problems.

In addition, pre-mature born children have higher eating difficulties, difficult habits, sense of self adequacy-inadequacy, and aggressive behaviour than those who are not born pre-mature. Children who have delayed and difficult births have greater sleeping and social difficulties. Likewise, first born children have more social difficulties than those of last borns. Again, children who are difficult to manage have more aggressive, non compliant, and delinquent behaviour than those who are easily managed. Also, children with paternal preferences have greater behaviour problems than those with maternal preferences.

Regarding interrelatedness of different behaviour problems, most of the behaviour problems are related to each other. Behaviour problems such as sleeping difficulties, eating difficulties, difficult habits, noncompliant behaviour and delinquent behaviour are also found in aggressive pre-school children. However, sense of self adequacy-inadequacy, and unsocial behaviour do not exist with aggressive behaviour.

With regard to the effectiveness of various behaviour modification techniques, differential reinforcement of other behaviour (DRO), differential reinforcement of incompatible
behaviour (DEI), time out (TO), combination of DRO and TO, and of DRI and TO effectively reduce aggressive behaviour of pre-school children. However, DRI and TO procedures are superior to DRO, and DRI and TO techniques are equally effective in reducing aggressive behaviour of pre-school children. Further combinations of DRO and TO, and of DRI and TO are superior either to DRO or DRI or TO alone in reducing aggressive behaviour. In addition, combination of DRO and TO and DRI and TO are equally effective in reducing aggressive behaviour of pre-school children.

Finally, behaviour problems, namely, difficult habits, sense of self adequacy-inadequacy, unsocial behaviour, non-compliant behaviour, and delinquent behaviour decrease with the reduction in aggressive behaviour. Also, intelligence of pre-school children increases as a result of reduction in aggressive behaviour.

SUGGESTIONS FOR FURTHER RESEARCH WORK

1. Due to paucity of time, the present study was limited to reduce or eliminate aggressive behaviour of the pre-school children. Such studies should also be conducted to reduce or eliminate other behaviour problems as well.

2. Effectiveness of other behaviour modification techniques such as response cost, over correction, aversive stimulation, extinction procedure etc. should also be tested in Indian conditions, besides the ones tried here.
3. The present study has been conducted on lower class families. It would be also fruitful to replicate the present study on families of all strata of the society.

4. Effectiveness of different behaviour modification techniques on school going children can also be studied and comparisons of both pre-school and school going children can be made.

5. Children with average intelligence were included in the present study. It would be fruitful and of great worth to conduct such research work on mentally retarded children.

6. In the present study, reduction in aggressive behaviour has resulted in reduction of other behaviour problems as well as DQ gains. To confirm such results, the present study should be replicated.

7. Further research work should be undertaken to replicate the present study in other regions of India and abroad.