CHAPTER SIX

DISCUSSION OF RESULTS

6.1.0 INTRODUCTION

This chapter deals with a detailed discussion of the results which were tabulated in Chapter Five.

The problem that was under investigation in the present study was to develop a therapeutic intervention package and try out its impact on some disruptive behaviour disorders of children. The therapeutic intervention strategies that were used were of 4 kinds: Yoga, Reinforcement, Time-Out and a combination of the first three. The disorders under investigation were Aggression and Hyperactivity.

The design of the present study was a pre-post design, with the study being conducted in four main phases, those of pre-intervention, intervention, post-intervention and delayed intervention phases.

The sample of children was divided into 5 groups: the 4 intervention groups, and a fifth control group. They were further categorized into 6 areas on the basis of the intensity of their behaviour disorder. The 5 groups were: Yoga, Reinforcement, Time-Out, A combination of all three, and a Control Group. The six categories were: high aggression, medium aggression, low

aggression, high hyperactivity, medium hyperactivity and low hyperactivity.

The initial intensity of the disorder was measured by means of a questionnaire and a baseline. These tools of measurement were readministered at the end of every intervention phase. The comparable results thus obtained showed the effects, if any, of the different intervention strategies. These results were then analysed and plotted.

6.2.0. WHY THESE VARIABLES?

The present investigation, as stated earlier, was an experimental study to analyze the differential impact of certain treatment strategies on behaviour disorders of children. The treatment strategies used were a combination of behaviour therapy and the Indian science of yoga, while the two behaviour disorders were the oft studied aggression and hyperactivity.

The reason for choosing to study only these two behaviours out of a plethora of disorders was that these are the two most common disorders among children today. Aggression and violence are on the increase throughout the world due, mainly, to a lot of external influences. In the United States of America, there

have been cases of boys no older than 10 years carrying guns to school and shooting their teachers and peers for doing something that was not liked. Fortunately, however, the state of aggression in India has not reached that level of madness. There is still hope for children of this country. And one way to see that aggression and violence remain under control is to try and develop ways and means of trying to cure it, especially so for children at a young age.

Hyperactivity, unlike aggression, is not dangerous to society. It does, however, have a very big influence on the individual and immediate family members. The child's academic achievement is affected, which could have an effect on his future. His social life maybe limited since not everyone wants a friend who is extra-talkative, does not listen to you and is always on the move. All these influences put together can have an adverse effect on the child's future. Hyperactivity too, therefore, needs to be controlled before any of these influences can set in.

Another reason for the inclusion of these two disorders was that since they are so common, parents were open to admitting that their child sufferred from them. A third disorder, Conduct

Disorder, which includes lying, cheating, stealing, playing truant, etc., could not be included since no parent was willing to admit that his child indulged in any of these behaviours. The teachers in the schools, too, rejected the idea that such children were admitted to their school. This is probably because of the stigma attached to these negative behaviours.

Yoga, although probably the oldest science of all, has not yet been fully explored for therapeutic purposes. There is, therefore, a need to develop this science with reference to children's mental health. Yoga has been used with adults to help them overcome stress, anxiety and a lot of psychosomatic and psychoneurotic problems. And in most cases, it has been used very successfully to overcome these difficulties.

This is one of the reasons why yoga was one of the treatment strategies empolyed in the present study. Another important reason was that it has rarely been used in conjunction with any behaviour therapy technique.

Reinforcement and time-out, the behaviour therapy techniques used in this study were employed because, unlike yoga, they have been used often, and with children. The results have shown that they can be successfully used to overcome child behaviour

problems. However, they have neither been compared to, nor employed in conjunction with, yoga.

The age group of the sample for this study was 9 to 12 years. This age group was chosen for various reasons. The main reason was that this is the age when children are between the stages of childhood and adolescence. They are well past the stage of childhood tantrums. This is, therefore, the age when any excess behaviour can be noticed and brought under control, before they enter the stage of adolescence where behaviour becomes more stabilized. This is not to say that after the teenage years there is no hope for misbehaving children, or for adults. Just that children are more flexible and learn things more easily at this age.

Another reason this age group was chosen had to do with the fact that yoga was one of the treatment strategies in this study. There are many different opinions as to what the right age is for children to start performing yoga asanas. Many of those proficient in this science say that 10 years is the right age. There are others, equally proficient, who, however, say, that there is no reason why a child as young as 6 years should not be able to perform yoga asanas.

A final reason for choosing this age group was that these children are more likely to respond to the reinforcement and time-out structure of therapy, since they would be able to understand the nuances better, and take these treatments more seriously than a younger age group.

6.3.0. QUALITATIVE DISCUSSION OF RESULTS

Aggression, for the present study, has been defined as: "the delivery of a noxious stimulus by one organism to another with intent to harm and with some expectation that the stimulus will reach its target and have the intended effect".

This definition of aggression was decided upon since it has been universally accepted. This definition, among the varieties of definition, talks only of the act of aggression, as against those which involve attributes of anger, assmptions about the nature of instigators, emotional aspects and the intent to injure.

Since this simple definition of aggression was adopted for the present study, it was easier for parents and teachers to spot the act of aggression and punish it or, accordingly, reinforce its absence.

Hypothesis One of the study states "There will be no impact of yoga on aggression". This hypothesis was disproved.

As can be seen from ANOVA results, both the ratings of teachers and parents are significant (9.89; 3.21). This shows that yoga (T1) has had a significant impact on the reduction of aggression when a comparison is made across the three intervention phases.

T-test results comparing each of the three intervention phases with the other, too, show a significant reduction across the pre-post (2.6) and pre-delayed conditions (2.44), although across the post-delayed condition, aggression does not show a significant reduction. These are the combined results of parent-teacher ratings. Separate ratings of parents and teachers across the three intervention phases show similar results. For both teachers and parents, the pre-post (2.71, 2.76) and pre-delayed (2.60, 3.35) conditions show a significant reduction. Across the post-delayed condition, however, only the parent ratings show a significant result (1.83).

All these results show that aggression can be reduced to a certain extent by the practice of yoga.

Hypothesis Two of the study states "There will be no impact of reinforcement on aggression". This hypothesis was disproved.

As the ANOVA results show, the ratings of teachers and parents (5.73, 10.32) are significant. The t-test results, too, show that reinforcement (T2) has had a significant impact across the pre-post (1.99) and pre-delayed (3.21) conditions. The post-delayed (0.81) condition result, however, is not significant.

The separate ANOVA ratings of teachers and parents, too, show a significant reduction (5.73, 10.32). As can be seen, the administration of reinforcement by parents (10.32) has been found to yeild better results. This is logical, because parents are in a better position to give rewards to their children than teachers are to students in their classes. Children are bound to listen to their parents too since they can be more consistent in the administration of reinforcements. In a class of 50-60 students, a teacher is likely to miss a few aggressive acts of the chhildren. And amongst peers, aggressive acts are usually a show of strength. Thus, if these are missed by the teacher and go unpunished, the child is more likely to act aggressively the next time, too.

The t-test results, too, prove the fact that the parent's

administration of reinforcement had a greater impact than the teacher's (pre-post: teacher-2.29, parent-2.87; pre-delayed: teacher-2.35, parent-3.08; post-delayed: teacher-1.17, parent-1.72).

Hypothesis Three of the study states. "There will be no impact of time-out on aggression". This hypothesis was proved.

This can be seen from the t-test results of combined parent-teacher ratings. The results, although they do show an impact across the three intervention conditions (1.03;1.02;0.29), are not statistically significant. The t-test results of separate parent-teacher ratings, too, do not show a significant reduction across any condition (pre-post: teacher-1.81, parent-0.53; pre-delayed: teacher-1.3, parent-0.77; post-delayed, teacher-1.57, parent-1.22).

ANOVA analyses too, show similar results (teacher-1.13; parent-1.61).

There could be several reasons why time-out did not work in the present study. In general, time-out has had controversial results about its effectiveness. There have been experiments where punishment has had a positive effect (Donnerstein and Donnerstein, 1976; Wilson and Rogers, 1975). But researchers

have also shown that punishment increases the probability of aggression occuring (Allensmith, 1960; Anderson and Burgess, 1977; Bandura, 1977).

In the present study, although time-out did not increase the aggressive behaviour, neither did it have a significant impact on the reduction of aggressive behaviour. Aggressive behaviour occurs independently, one behaviour at a time. Therefore, if one aggressive act is punished it can easily be replaced by another.

Another important reason for the apparent failure of time-out is that in Indian schools, classes are normally over full with students, with teachers having more than they can handle on their hands. In such cases, any misdemeanour on the child's part - be it big or small- is punished, with the child being sent out of the class. School children, therefore, are used to the process of punishment. Also, the teacher, with so many students to pay attention to, may not be able to keep to the pattern of scheduled time-out. Hence, if this pattern is not maintained, the time-out administration turns into punishment.

For the present study, teachers were told that time-out meant separation from positive reinforcement. However, as mentioned earlier, during regular classwork there is no facility for this,

and by the time the student goes for a class of his liking (for example, physical training), the purpose of time-out is completely lost. Thus, this treatment strategy might not have helped reduce the disorder.

Hypothesis Four of the study states "There will be no impact of the combined therapeutic package (consisting of all the three strategies, namely, yoga, reinforcement and time-out) on aggression". This hypothesis was disproved.

ANOVA results show the separate ratings of teachers (3.38) and parents (6.77) as being significant. Separate teacher-parent t-test results, too, show significant scores across the pre-post (1.9, 2.39) and the pre-delayed (2.22, 2.15) conditions. The post-delayed condition, however, does not show a significant result. T-test results, for combined teacher-parent ratings, too, show significant scores across the pre-post (3.03) and pre-delayed (2.11) conditions.

The therapeutic package that was to be developed, was the stated problem of the present study. This package consisted of a combination of the three techniques discussed above, that is, yoga, reinforcement and time-out. As the results show, this package proved to have a significant effect on the behaviour

disorders inspite of the fact that one of the three techniques, time-out, had not proved effective independently. This could be explained by the fact that the positive effects of the other two techniques, that is, yoga and reinforcement, may have negated the non-influence of the third, that is, time-out. And. therefore, a significant result was obtained.

Hypothesis Five of the study states "There will be no reduction of aggression in children belonging to the control group". This hypothesis was proved.

ANOVA results show that neither teacher ratings (1.36) nor parent ratings (0.52) show a significant reduction. T-test results, too, confirm this finding, as the pre-post (1.48), pre-delayed(0.70) and post-delayed(0.08) condition results show.

Hypothesis Six of the study states " There will be no difference between the experimental groups (the groups undergoing the intervention techniques) and the control group with reference to the reduction of aggression". This hypothesis was disproved.

As the t-test results show (12.35), there was a significant difference between the two groups, that is, the experimental and control groups.

From the results it can, therefore, be assumed that since the five groups were matched equally and the control group has shown no reduction in the behaviour disorder, that the reduction of the disorders in the other groups was a result of the intervention strategies employed.

If we see the ANOVA results of the three categories of aggression for the combined ratings of teachers and parents, it can be seen that the intervention strategies have worked best for the group of children falling under high aggression. The medium aggression and low aggression groups, although they show a reduction in the behaviour, do not show a significant reduction (high aggression - 7.27; medium aggression - 0.21; low aggression - 0.21). T-test results for the combined ratings of teachers and parents show similar results. The high aggression group shows a significant reduction across the pre-post (2.93) and pre-delayed (2.42) conditions. The medium aggression group (1.48; 1.53) and low aggression group (0.68; 0.25) do not, however, show a significant reduction across the pre-post and pre-delayed conditions, and no group of children shows a significant reduction across the post-delayed condition.

There could be a number of reasons why only the high

aggression group showed a significant reduction, while the other two groups did not.

In the low aggression group, to begin with, the intensity of the disorder was minimal. And a reduction from that to the absolute zero would, inspite of being effective, not be statistically significant. Also, this low a level of aggression might be difficult to identify if the child is not under constant observation. This would be more true in the case of teachers who, having to watch a class full of 50-60 students at a time, would not be able to devote enough time after a particular student to notice his or her behaviour. Parents, however, spend quality time with their children. They also, obviously, know their child more than the teacher does her students. They can, therefore, pinpoint any act of aggression, however small, and accordingly punish it, or reinforce its absence.

In the case of the medium aggression group, too, the teachers may have the same problem. These children could sometimes be very aggressive, or be absolutely quiet so as to make their aggressive acts almost invisible. It is only when they really act out that they can be noticed by teachers and dealt with as necessary.

In a classroom situation, it is mainly the highly aggressive

children who are noticed, since they are the ones who create the most distractions and disruptions and interrupt the teaching process. Such children's aggressive acts can be easily spotted and noted. This makes it easy for reinforcement and/or punishment to be administered.

If we compare each technique with the other for each category of aggression, we see that for low aggression (LA) and high aggression (HA), there is a significant difference between T1 (yoga) and T2 (reinforcement). The difference between T1 and T3 (time-out) is significant for medium aggression (MA) as is the difference between T1 and T4 (therapeutic package). T1 and T5 (control group) show a significant difference for LA and MA.

T2, when compared with the other techniques, shows a significant difference with T3 for LA and HA, with T4 for LA and with T5 for HA.

T3 shows a significant difference with T4 for HA and with T5 for LA.

T4 shows a significant difference with T5 for LA, MA and HA.

When a similar analysis is done for the disorder of aggression as a whole, similar results emerge. Differences between T1T2

(2.7), T1T5 (4.18), T2T3 (2.34), T2T4 (2.31), T2T5 (5.00), T3T4 (2.27), T3T5 (3.29) and T4T5 (5.24) are significant.

All these results confirm the fact that the intervention strategies of yoga, reinforcement and the therapeutic package were effective, with time-out too, showing a significant difference when compared to the control group.

If we take the ANCOVA results, they too show significant F scores for the combined ratings, separate parent ratings across all three conditions, while teachers ratings show significant F scores across only the pre-post and pre-delayed conditions.

All these results of the present study are supported by findings of other experimenters (Chasdi and Lawrence, 1955; Brown and Elliot, 1965; Deur and Parke, 1970; Carr, Newsom and Binkoff, 1980; Whitman, 1990), that aggression can be reduced by means of various treatment methods.

Hyperactivity is a shorthand term for a cluster of complaints about children's behaviours; restlessness, inattentiveness, excitability, overactivity, impulsiveness, fidgetiness, distractedness and disruptiveness are most prominent. The definition of hyperactivity applied in the present study,

therefore, included all of the above-mentioned characteristics, and is as follows: "perennially restless, aimless and impulsive behaviour involving motor activity which occurs at a very high rate".

Like aggression, hyperactivity, too, is a common phenomenon and,inspite of research being done on its various aspects, we are no nearer to knowing what causes it or how it can be treated.

Hypothesis Seven of the study states "There will be no impact of yoga on hyperactivity". This hypothesis was disproved.

As can be seen from ANOVA results, the ratings of both teachers (6.26) and parents (4.12) are significant, indicating that yoga did have an impact on reducing hyperactivity. T-test results, too, attest to this. Results across two of the three conditions (pre-post - 2.5; pre-delayed - 2.08) are significant. The separate teacher-parent t-test results, too, follow a similar pattern. For teachers and parents, the pre-post (3.1; 2.9) and pre-delayed (2.73; 5.94) condition ratings show a significant difference, whereas the post-delayed ratings do not.

In most of these results, it can be seen that the scores of teachers are higher then those of parents. This could be because

in classes where the children are restricted more, their disruptive behaviour and, consequently, its absence would be noticed more than in a freer home environment. Hence, changes .pa noticed by teachers would not be as easily observed by parents. That might explain why teacher ratings are lower than parent ratings.

Hypothesis Eight of the study states "There will be no impact of reinforcement on hyperactivity". This hypothesis was disproved.

T2 - reinforcement - as ANOVA and t-test results show, has shown a significant effect on the behaviour disorder of hyperactivity. As separate teacher-parent results show, ANOVA (4.69; 9.68) and t-test findings across all three phases show (pre-post: 2.67, 2.93; pre-delayed: 6.6, 4.00; post-delayed: 1.93, 4.82) that reinforcement has been a very effective method for reducing hyperactive behaviour. Combined teacher-parent results show, however, that the post-delayed intervention phase did not yield significant results.

Reinforcement has been tried experimentally with contrasting results. As one investigator (Douglas, 1984,1985,1989) has hypothesized, hyperactives have an abnormally strong inclination

to seek immediate reward, which is probably why reinforcement worked for them. But once the schedule was changed to a partial one, their behaviour deteriorated to some extent, so that by the time of the delayed condition, some of the gains of reinforcement were lost.

It can also be seen from the results that parents have a higher score than teachers, thus indicating that their administration of reinforcement was more effective than that of the teachers. This effect is natural, since parents are in a better position to reinforce their child every time he refrains from acting out, since they have to pay attention to only one child at a time, as against teachers who have a class of over 50 students to look after. Hence, even though teacher's administration of reinforcement was effective significantly, it made less of an impact than the reinforcement given by parents.

Hypothesis Nine of the study states " There will be no impact of time-out on hyperactivity". This hypothesis was proved.

ANOVA results for separate teacher (1.89) and parent (1.70) ratings show no significant reduction of the behaviour disorder. T-test results of the three phases too show that there has not been a significant impact across any condition (pre-post: 1.69,

pre-delayed: 1.60, post-delayed: 0.99). Separate teacher-parent t-test results too show that except for the parent ratings on the pre-delayed condition (3.15), none of the other scores is significant.

This significant result could be explained by the fact that, as in the case of reinforcement, time-out that is administered by parents will tend to be more effective than that administered by teachers. And the fact that only the pre-delayed condition shows a significant result might be taken to mean that for time-out to take effect, it has to be administered over a very long period of time, consistently and correctly. The child, too, has to learn that there is a distinction between time-out and punishemnt. And this is possible only at home, and after a great deal of time lapse.

Hypothesis Ten of the study states "There will be no impact (consisting of all three strategies, namely, yoga, reinforcement and time-out) on hyperactivity". This hypothesis was disproved.

As ANOVA results show, both teacher ratings (5.56) and parent ratings (10.91) indicate that there was a significant impact of the therapeutic package on the behaviour disorder of hyperactivity. T-test results show significant scores for both

teachers and parents across the pre-post (3.41; 5.74) and pre-delayed (2.89; 5.57) conditions and for parents across the post-delayed (2.31) condition. Combined teacher-parent t-test results, too, show significant scores across the pre-post (2.72) and pre-delayed (2.07) conditions.

As with aggression, although time-out did not independently signficantly reduce hyperactivity, in combination with yoga and reinforcement, it had a significant impact on reducing hyperactivity. This shows that yoga and reinforcement produce a greater positive effect than the negative effect of time-out.

The parent rating results are higher, which again confirms the fact that since parents are in a better position to administer reinforcement they got better results.

This may also be taken to mean that for the therapeutic package, the effect of reinforcement was greater than the effect of yoga, since T1 (yoga) shows higher teacher results while T2 (reinforcement) shows higher parent results.

Hypothesis Eleven of the study states "There will be no reduction of hyperactivity in the control group". This hypothesis was proved.

ANOVA results do not show a significant score for either teachers (0.63) or parents (0.02). T-test results, too, do not show significant scores for teachers or parents across any of the three intervention phases (pre-post: 0.90, 1.04; pre-delayed: 1.00, 1.12; post-delayed: 0.57, 0.89).

These results can be interpreted to mean that it was the intervention techniques which led to a reduction of hyperactivity, and not any outside chance factors.

Hypothesis Twelve of the study states "There will be no difference between the experimental groups (those undergoing the intervention strategies) and the control group with respect to the reduction of hyperactivity". This hypothesis was disproved.

As the T-test results show, there was a significant difference between the two groups (9.15) indicating that the different intervention strategies employed had an impact on the behaviour disorder of hyperactivity.

ANCOVA scores too show significant F results across all three phases for combined and separate teacher-parent ratings.

If we take the results of hyperactivity as divided into the three categories, it can be seen from ANOVA results that neither

low hyperactivity (LH-0.20) nor high hyperactivity (HH-1.23) show significant results; only medium hyperactivity (MH -5.72) does. Separate teacher-parent ANOVA analyses show significant scores for teachers in all three categories (LH - 3.54; MH - 3.38; HH - 8.22), whereas parent ratings are significant only for MH (10.28) and HH (2.33).

In the low hyperactivity group, as in the case of the low aggression group, it is difficult to observe a very slight degree of hyperactive behaviour if the child is not under constant observation. However, where hyperactivity is concerned, it is easier for teachers to observe even a low degree of intensity This is because when the child is in a classroom situation, he is under strict restrictions; hence any small out-of-seat behaviour is immediately noticed and dealt with accordingly. In contrast to this, the child at home is free from such minor restrictions. Therefore, the same behaviour that would attract the teacher's attention in the classroom, goes unnoticed by parents. Teachers could, therefore, have been more effective than parents.

The high hyperactivity group, on the other hand, is in direct contrast to the low hyperactivity group. This child, who is highly hyperactive, is always on the move. Before you correct

him for one misbehaviour, he is already on to the next one. Unlike in aggression, this child is most difficult to manage and, therefore, to help. If he is reinforced or punished, he will not know what he is being administered these techniques for, since it will be very difficult to see the line between one behaviour and the next.

Punishment or reinforcement can be administered for the totality of the behaviours, but the effect of this would depend on the individuals responsible for the administration and the particular child it is being administered on. The results of the high hyperactivity group show that although a reduction has taken place, it is not significant.

The medium hyperactivity group has shown a significant change across all the conditions. This shows that this behaviour of a milder degree is easier to distinguish and bring under control. The moderate frequency of this behaviour is easier to control, since the child is not always hyperactive. It is easier to see where one behaviour ends and the next begins, and its presence or absence can be punished of reinforced. This way, even the child learns that the way he is behaving is wrong and can improve upon it. And the next time he refrains from behaving that

way, he can be reinforced for it.

When each intervention strategy is compared with each other, it can be seen that significant results are seen while comparing T1T2 (2.67), T2T5 (3.46), T3T4 (3.92) and T4T5 (3.31). It can, therefore, be seen that the strategies which show most impact on hyperactivity are yoga and the therapeutic package.

Comparing each technique for each category, the results show the following. For LH, significant differences are seen between T1T2 (5.75), T1T3 (5.61), T1T4 (5.72) and T2T5 (3.84). For MH, significant differences are seen between T1T2 (3.95), T1T4 (3.37), T2T5 (4.81) and T4T5 (4.11).

These results may be interpreted to mean that yoga was the most effective for hyperactivity. Yoga is performed while the child is sitting still in one place, without moving about. The child sits on one spot continuously, for anything between 25 to 45 minutes. This, done daily, has a calming effect on the muscles of the body, and the child consequently moves around less.

Although this study was the first time that yoga was combined with behaviour therapy, there have been researches where yoga has been used to treat mental stress, anxiety (Champa Rao

and Murthy, 1975) and psychosomatic illnesses. Yogic training was also given to 30 school students in an experiment by Palsane and Kohen (1973) and all of them improved as was seen by subsequent testing on psychological tests.

The results obtained in the present study do not categorically state that one technique works, or the other does not work, with aggressives and/or hyperactives. These were the results of the present study only, and a lot of indepth research still needs to the done before it can be said with full assurance whether one particular treatment works or does not work with a particular disorder.

6.4.0. SUMMARY

The results of the present study can be summarized as follows:

1. There is a positive correlation on questionnaire and baseline ratings between teacher and parent ratings.
2. For aggression, the therapeutic package was most effective.
3. For low aggression, yoga was most effective.
4. For medium aggression, yoga was most effective.
5. For high aggression, reinforcement was most effective.
6. For hyperactivity, the therapeutic package was most effective.
7. For low hyperactivity, yoga was most effective.
8. For medium hyperactivity, yoga was most effective.
9. For high hyperactivity, yoga was most effective.