CHAPTER FIVE

RESULTS AND DISCUSSIONS
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In the present study effect of four variables, i.e., Ordinal Position, Sex, Achievement Motivation and Reward, on jealous behaviour of adolescents was studied. The obtained data were analysed through appropriate statistics in the previous chapter. The results are discussed in the present chapter. The discussion comprises of both individual and interaction effects.

In the present investigation data were collected to study the jealous behaviour of first and later born males and females with high and low achievement motivation. The jealous behaviour was studied in two different conditions i.e., control (non-reward) and experimental (reward). In control condition the subject had to work on a non-competitive task solely while the subject of experimental condition had worked in a competitive situation wherein another student had been declared successful and rewarded by the experimenter depriving the subject from the reward. After the completion of the test subjects of both the conditions were administered jealous behaviour test. The scores on jealous behaviour test served as the response measure.

1. EFFECT OF INDIVIDUAL FACTOR

The present research deals with four independent factors in relation to their effects on dependent variable i.e., Jealous Behaviour. These are (i) Ordinal Position, (ii) Sex, (iii) Achievement Motivation and (iv) Reward.

(I) JEALOUS BEHAVIOUR IN RELATION TO ORDINAL POSITION

The first problem of the present research was whether ordinal position exerts any effect on jealous behaviour of adolescents. It had been assumed that first borns would be more jealous as compared to later borns. Data in Table 15 shows that average jealous scores of first born adolescents (M=51.125) is higher than later born
adolescents (M=49.45). These data have been exhibited in Figure 1.

![Bar Diagram Showing Average Jealous Scores Of First Born And Later Born Adolescents](image)

**Figure # 1**: Bar Diagram Showing Average Jealous Scores Of First Born And Later Born Adolescents

In order to test the hypothesis in this concern computation of F-ratio was useful. This was done in a four-way analysis of variance wherein three other factors—sex, achievement motivation and reward—were subjected to statistical test (Table 16). The obtained F-ratio for the factor of ordinal position was 4.0735, which is significant at .05 level of confidence for 1 and 304 degrees of freedom. Apart of it, CRs were also computed to ascertain the significance of difference between any two comparison groups of first borns and later borns based on other factors i.e., sex, achievement motivation and reward, considering one, two or all the three at a time. Six CRs out of 22 are found significant either at .05 or at .01 level of confidence for 38 degrees of freedom in a one-tailed test (Table 17). The significant F-ratio and CRs show that there is marked difference between first born and later born adolescents in respect of their jealous behaviour. In other words, the first born adolescents are genuinely more jealous in comparison to later born adolescents. The results confirm the research hypothesis.

The ordinal position of the child is established at the time of his birth in the
family. While this may change within a year or two after birth, the child's ordinal position remains fairly static from then on. For example, a second born child may be the "baby of the family" or hold a last born ordinal position for a year or more after birth but then be replaced by a newly born sibling. Shifting from the "baby of the family" position to a middle born position may be upsetting. It is not ordinal position per se that leaves its mark on the individual's personality and patterns of behaviour but rather circumstances in life related to this position—such as the role individual plays in the family and the treatment he or she receives from significant family members and their attitudes. Since roles, attitudes and treatment are far more likely to persist than to change, the individual constantly receives reinforcements which, in time, result in firmly established habits. Hurlock (1981) asserts that first born resent having to serve as models for younger siblings and having to assume some of their care. They have feelings of insecurity and resentment as a result of having being displaced as a centre of attention by a second born sibling and also lack dominance and aggressiveness as a result of parental over protectiveness. They are often unhappy because of insecurity arising from displacement by younger siblings and resentment at having more duties and responsibilities than younger siblings and also have a desire to win back parental approval if they feel they are being replaced by younger siblings. Contrary to this, the later borns tend to be willful and demanding as a result of less strict discipline and "spoiling" by family members. They have fewer resentments and greater feeling of security as a result of never being displaced by younger siblings. They experience good social relationship out of the home also and tend to be happy because of attention and "spoiling" from family member during early childhood. By the time he is ready to go out into the world, his parents are in a better financial position to help him and siblings are also willing to contribute their shares. It is a feather in the cap of every family member to have one of its member move up the educational, vocational and social ladders.
It is accepted by some that first borns enjoy a favourable position in the family as compared to later borns. Usually, the former represent the centre of attraction for the parents and receive a monopoly of their time. The parents of first borns are usually not only young and eager to ramp with their children, but they also spend considerable time talking to them and sharing activities, something that tends to strengthen bonds of attachment (Schooler, 1972; Bronson, 1974).

On the other hand, being a first born may not be as advantageous as it is built up to be. Parents of first borns may be inconsistent and inexperienced in child rearing practices. First borns are usually punished more severely and rewarded more generously than later borns, thus creating an imbalance. And because the parents are eager to succeed and see clear-cut results, the first born is sometimes forced to succeed and strive for approval (Adams and Phillips, 1973). Altus (1966), Rothbart (1967), Burton (1968) and Thompson (1974) report that first borns tend to be more conscientious and have higher level of self-esteem than later borns. First borns are also characterized by being more sensitive and studious than later borns, who may be more loving, humorous and less introverted than first borns. Schacter (1959); Rhine (1968) and oberlander et al. (1970) observed that first borns were tended to become anxious, dependent and conforming. In a study Bigner (1974) showed that the younger siblings, assign "high power" status to older sibling. Sharma (1987) observed that first born children had more problems in general and more scholastic and personality problems and rivalry is common among them in comparison to the later borns. McKeever (1983) also attributed ordinal position as one of the vital factor in the development of personality. In a study of Bers and Rodin (1984) seventy two 6-21 yrs. old subjects were read twelve stories in which the protagonists failed to excel or attain something in each of 6 areas: possessions, sports, art, appearance, mathematics and reading. Measures from the responses to the stories were grouped into three components of social comparison jealousy spontaneous comparison, affect and
thoughts about jealous behaviour. It was found that older subjects revealed more social comparison jealousy in areas of greater importance to themselves, whereas younger subjects did not show this differentiation as clearly.

The findings of the present study also reveal that the first borns are more jealous than later born adolescents. As has been discussed earlier, by virtue of his ordinal position the first borns are nurtured in an absolutely different environment than later borns, which in fact is the vital contributing factor in higher jealous behaviour among first borns. With the birth of another sibling in the family the first born faces undesirable conditions in the family. He has to loose his status as the "baby of the family". Moreover, being the eldest, he is more under the pressure constantly to conform with the parental expectations and aspirations. Apart of it, he is expected to perform a model behaviour in front of his younger siblings which adds to already increased responsibilities being the eldest. These conditions force the first born adolescent to sacrifice a lot along with feeling of insecurity. At the same time, he observes the younger sibling cherishing a privileged, comfortable, wishfulfilling conditions. Due to the last born position he always remains the "baby of the family" and enjoys attention of the family members. These unfavourable conditions for himself in the family and quiet favourable conditions for the younger siblings inculcate peculiar habit pattern in first borns dominated by resentful behaviour which in due course observable in his general behaviour outside the family too and, he is more jealous than his younger siblings. The finding of the present research are in consonance with the findings of Sewall (1930), Koch (1956), Brim (1958), Schacter (1959), Altus (1966), Rothbart (1967), Burton (1968), Rhine (1968), Oberlander (1970), Schooler (1972), Adams and Phillips (1973), Bronson (1974), Thompson (1974), Bigner (1974), Hurlock (1981), Dunn and Kendrick (1982), Mckeever (1983), Neubauer (1983), Bers and Rodin (1984), Sharma (1987) and Carter (1992).
In the present research sample was drawn from two sex groups - male and female. Looking at the normally observed behaviour patterns of both the groups it had been assumed that female adolescents would be more jealous in comparison to male adolescents. As in male dominating society, females from the start are deprived of the privileges males enjoy. This ever existing deprived conditions probably lead to development of some personality traits which prone females to be more jealous not only towards the opposite sex group but towards the same sex group also.

However, it is clear from Table 15 that average jealous behaviour scores of males (M=50.90, Figure 2) is higher than those of females (M=49.675, Figure 2). In order to see whether there is any marked difference in jealous behaviour of male and female adolescents, difference in average jealous scores was tested through F statistics (Table 16).

The obtained F-ratio for the difference is 2.178, which is not significant at any acceptable level of confidence for 1 and 304 degrees of freedom. Apart of it, CRs were also computed to ascertain the significance of difference between any two comparison groups of males and females based on other factors i.e., ordinal position,
achievement motivation and reward, considering one, two or all the three factors at a time. One out of 22 CRs is found significant at .05 level of confidence for 38 degrees of freedom in a one tailed test (Table 18). The insignificant F-ratio and CRs provide ample statistical ground to refute the research hypothesis, i.e., females would be more jealous than males. In other words, the two sex groups do not differ truly in regard to their jealous behaviour.

The findings of the present research are just against the hypothesis in this concern. Though it was expected that females would be more jealous, males have scored higher on jealous behaviour test in comparison to females. However, the difference observed is not found significant, amply providing sound statistical ground to believe that there is no genuine difference between the two sex groups in respect of their jealous behaviour.

Looking at the structure of prevailing society, as discussed earlier, it was expected that females would be more jealous than males. However, the higher scores of males on jealous test though insignificant, indicates towards the changing tendency in this regard.

The modern society is bombarded with mass media. With the help of advance information technology, there is more awareness among females regarding their own status, rights of equality. To maintain a better socio-economic status in the modern society it has been a preference how for females to support the family on economic front also. To achieve this earning status the female adolescent feels an urgency of better education than their predecessors had. These changing conditions have brought all those privileges to female adolescents for which their predecessors were deprived of, leaving no any ground to feel jealous. Contrary, the males who were enjoying earlier a better and privileged status in the society find themselves now equivalent to their counter sex part. In so many situations being female the achieve-
ments of this group is highlighted through the mass media while the same achievements of males oftenly do not deserve as a matter of appreciation looking at their well supported potentialities. This change in total scenario is proning male adolescents to bear upon such personality traits which are making them to be more jealous.

The family structure and its size also seem to play vital roles in this regard. Preference for a nuclear family than a joint one reduces the workload of females in the family, providing better opportunities for female adolescents in the family to grow up along with their potentialities. Similarly, preference for a smaller family i.e., parents plus two kids with a desired ratio of 1:1 for male and female child also bringing up such an environment within the family which permits the stimulation of potentialities and personality development almost similar for both the sexes. Parents being known that only daughter has to depart from the family at a certain age after her marriage, pour down maximum of their love towards her which in turn becomes a base of jealousy in the male child. Moreover, being expected to take care of his sister, the brother had to restrict his own activities too, while having the security symbol beside her, the sister still enjoys the freedom. This cause jealousy in the brother for his sister and trend seems to generalize over all girls. It is also logical to state that because girls long before discover that their elementary school days are over, that doing better academically than the boys in their classes regarded as sex-inappropriate, they begin to develop the habit of working below their capacities. In time, this habit of under achievement spreads to all areas of their lives in which their achievement are compared with those of boys. The "motive to avoid success", has become the characteristics of many females in almost all cultures, proning them to be comparatively lesser jealous than the males. These may be the reasons for higher jealous scores of male adolescents in comparison to that of female adolescents in the present investigation. However, the insignificant findings clearly provide the base to conclude that the
sex does not play any role in regard to jealous behaviour of adolescents. This finding of no difference between the two sexes in regard to their jealous behaviour is consistent with the finding of Paul and Foss (1996) who also observed no gender difference in jealous reactions and inconsonant with the findings of Gesell and Ames (1956). Pressey and Kuhlen (1957), Jersild (1963), Garai (1968), Croake (1969), Praveenlal et al. (1988), and Peretti et al. (1997) Who observed higher jealousy in females in comparison to males.

(III) JEALOUS BEHAVIOUR IN RELATION TO ACHIEVEMENT MOTIVATION

Another important problem considered in the present research was in relation to the effect of achievement motivation on jealous behaviour of adolescents. It was expected that adolescents with high achievement motivation would be more jealous than those with low achievement motivation. As achievement motivation refers to the motive to achieve some standard of accomplishment or proficiency and is determined by socialization practices, it can be reasoned that a person with high achievement motivation would be more jealous so as to excel himself to others.

A perusal of Table 15 shows that average jealous scores of adolescents with high achievement motivation (M=50.881, Figure 3) is higher than those with low achievement motivation (M=49.694, Figure 3).

Figure # 3 : Bar Diagram Showing Average Jealous Scores Of Adolescents With High And Low Achievement Motivation
An F-ratio was computed to check the significance of this difference between the two groups in respect of their jealous behaviour. The obtained F-ratio (F=2.045, Table 16) is not significant at any acceptable level of confidence for 1 and 304 degrees of freedom. Apart of it, CRs were also computed to ascertain the significance of difference between any two comparison groups of high and low achievement motivation based on other factors i.e., ordinal position, sex, and reward considering the two or all the three factors at a time. Only two out of 22 CRs are found significant at .05 level of confidence for 38 degrees of freedom in a one tailed test (Table 19). These insignificant results provide sound statistical ground to accept the null hypothesis in regard to difference in jealous behaviour of adolescents with high and low achievement motivation refuting the research hypothesis. Though the adolescents with high achievement motivation excel those with low achievement motivation, the difference of 1.187 is not evidenced as genuine statistically, that is, both the groups exhibit the jealous behaviour almost similar. As discussed earlier person with high achievement motivation is motivated to achieve some standard of accomplishment or proficiency and with this target in his mind he works harder and also feels quiet jealous with those people to whom he finds excelling. Probably his jealous itself works as motivating force for him. The present world is running under the whims for excellence and only those who show desirable level of excellence are appreciated.

The existence too depends on the excellency shown by the person in the present competitive world. Hence, desire for higher achievement is not only a matter of motivation now a days but a forced situation wherein every individual is compelled to strive forward with remarkable achievement. The successful efforts brings in the satisfaction and guarantee for the existence while unsuccessful efforts leads to dissatisfaction and further struggle for existence. As person with low achievement motivation works under pressure only in these circumstances, oftenly finds himself away from the target and consequently feels envy to those who reach the target. Thus, the
modern competitive world has raised the jealousy among both—those with high achievement motivation and those with low achievement motivation—almost equally, though the cause for jealousy is variant. The adolescents with high achievement motivation feel jealous due to their intense desire for better standard of proficiency while adolescents with low achievement motivation feels jealous due to their deprived status. These may be the reasons for insignificant difference between the two groups in regard to their jealous behaviour, found in the present research.

Many studies (Heckhausen, 1967; Atkinson and Raynor, 1978; and Bakhteyar Fatmi, 1990) reveal that the first borns tend to be of higher achievement motivation and more jealous in comparison to their younger siblings. It too has been observed that children with high achievement motivation express more jealous as compared to their counterparts—with low achievement motivation. They reason that as children with high achievement motivation have a high level of self-esteem and thus cannot see any other person achieving a higher position than themselves. If any person shows higher achievements in comparison to these adolescents with high achievement motivation, they become jealous with that person and due to this jealousy they may harm or tease him. The finding of the present research goes hand to hand with these findings of Heckhausen (1967), Atkinson and Raynor (1978) and Bakhteyar Fatmi (1990).

(IV) JEALOUS BEHAVIOUR IN RELATION TO REWARD

The author of the present work also intended to deal with the problem whether reward exert any effect on jealous behaviour of the adolescents. For the purpose, the subjects were studied for their jealous behaviour under two conditions—control (non-reward) and experimental (reward). As stated earlier the subjects of the control (non-reward) group had to work on a non-competitive task in solo situation before being administered the jealous test while the subjects in experimental condi-
tion (reward) had worked in a competitive situation with another student wherein the other student was declared successful and rewarded by the experimenter, followed by administration of jealous test.

It was hypothesized that adolescents in reward condition would be more jealous than those in control condition. It is clear from Table 15 that average jealous scores of adolescents in experimental (reward) group ($M=53.175$, Figure 4) is higher than that of adolescents in control (non-reward) group ($M=47.40$, Figure 4). An F-ratio was computed to check the significance of this difference between the two groups in regard to their jealous behaviour. The obtained F-ratio ($F=48.421$, Table 16) is significant at .01 level of confidence for 1 and 304 degrees of freedom. Apart of it CRs were also computed to ascertain the significance of difference between any two comparison groups of non-reward and reward conditions based on other factors i.e., ordinal position, sex and achievement motivation, considering one, two or all the three factors at a time. All the 22 obtained CRs are found significant either at .05 or at .01 level of confidence for 38 degrees of freedom in a one-tailed test. These significant F-ratio and CRs confirm the research hypothesis refuting the null hypothesis in this regard. In other words, it can be said that adolescents in experimental (reward) group are truly more jealous as compared to adolescents in control (non-reward) group.
As has already been stated earlier that the subjects in experimental group were tested for jealous behaviour after working on a competitive task, wherein the other student was rewarded by the experimenter and depriving the subject from the reward. It was reasoned that deprivation from the reward and at the same time observing the other student being rewarded by the experimenter induced jealousy in the subject. Contrary to this, the subjects of control group were tested for their jealous behaviour after working on a non-competitive task in solo situation. Thus, there was no motive to achieve any standard of proficiency and hence did not induce any jealousy. This may be attributed as the probable cause of higher jealous behaviour among adolescents in reward condition in comparison to those in non-reward condition.

In the present competitive society only those are rewarded who seek outstanding achievements as per the societal norms. Such people enjoy an honorable status in this achievement admiring society. This higher status of rewarded people certainly provokes a feeling of deprivation, dissatisfaction, and dejection among those who are unable to seek such a remarkable achievement. This may also be the reason
of higher jealous behaviour scores of the subjects of reward group wherein they were deprived of the reward in a competitive situation as compared to the control condition where in no such competition was established.

Rewards serve two purposes: they are educational, informing the adolescent that his behaviour has won social approval and is "good" behaviour and they are egobolsterings, stimulating the adolescents to continue to act in that way. (Winterbottom, 1953; Duboss, 1954; Jones, 1954; Clifford, 1959; Vincent and Martin, 1961; and Witryol et al. 1965) However, at the same time reward to one person brings in frustration and arising the negative emotions in the person who remains unrewarded. Probably this may also be the cause for high jealous behaviour in the subjects of experimental (reward) group.

2. Interaction Effects of the Factors

So far, we have been discussing the effect of the single factor (ordinal position, sex, achievement motivation and reward) on jealous behaviour of the subjects. We can also study the joint effect of any two or more factors at a time. Thus, it may be interesting to see, for example, whether the difference between first born and later born adolescents varies due to their sexes, achievement motivation levels or non reward/reward conditions. In general, when a number of individuals or items are grouped according to several factors of classification and these factors are not independent, there is said to be interaction between them. The interaction is a measure of the extent to which the effect upon dependent variable of changing the level of one factor depends upon the level of others. Thus, the two treatments say N and P each of two levels (0 and 1), the effects of four treatment combinations can be written $n_0p_0$, $n_0p_1$, $n_1p_0$, and $n_1p_1$. If the treatments are independent, the effect of varying from $n_0$ to $n_1$ could be the same with $p_0$ as with $p_1$. The extent to which this is not so is a measure of interaction.
The combined effects of various independent factors dealt in the present investigation on jealous behaviour of adolescents would be discussed hereafter.

A. FIRST ORDER INTERACTION EFFECT

(1) JOINT EFFECT OF ORDINAL POSITION AND SEX

It is interesting to see whether ordinal position and sex yield any significant interaction effect on jealous behaviour of adolescents. In other words, the question arises whether first born and later born adolescents belonging to different sexes exhibit similar jealous behaviour or there is any joint effect in respect of their jealous behaviour. For the present research it was assumed that first born females would attain the maximum scores and later born males would attain the minimum scores on the jealous behaviour test; the other two groups—later born females and first born males would remain in between the two extreme groups. In other word, there would exist an interaction effect of ordinal position and sex on jealous behaviour of adolescents.

A four-way analysis of variance was computed to study the individual and interaction effect of four variables (ordinal position, sex, achievement motivation and reward) on jealous behaviour, wherein one of the first order interaction was between ordinal position and sex which yielded an F-ratio of 1.525 (Table 16). This interaction F-ratio is not significant at any acceptable level of confidence for 1 and 304 degrees of freedom and thus clearly indicates that both the factors—ordinal position and sex—are independent of each other as regards to their effect on jealous behaviour of the subjects.

It is clear from Table 21 that average jealous scores of first born males is 52.25, of first born females is 50.00, of later born males is 49.55 and of later born females is 49.35. These data reveal that jealous scores of first born and later born
adolescents do not vary, genuinely because of their sexes. That is, the obtained difference in regard to jealous behaviour between first borns and later borns (Figure 5) does not vary significantly for males (average difference = 2.7) and for females (average difference = 0.65). The same data also reveal that the average difference between first born males and females (Figure 6) is 2.25 while that of later born males and females is 0.20 and these differences are not found to vary significantly in the present investigation. We have seen above that first borns are comparatively more jealous than later borns while no genuine difference was found between males and females in respect of their jealous behaviour. However, the insignificant interaction between ordinal position and sex signifies that there does not exist any considerable joint effect of the two factors on jealous behaviour of adolescents rather they are independent from each other in this regard. Hence, our hypothesis does not stand to the empirical test.

Figure # 5: Obtained Average Difference Between First Born And Later Born Adolescents For Males And Females
Figure # 6: Obtained Average Difference Between Males and Female for First Borns and Later Borns

(II) JOINT EFFECT OF ORDINAL POSITION AND ACHIEVEMENT MOTIVATION

It is also interesting to see whether achievement motivation affects first born and later born adolescents equally in regard to their jealous behaviour or first born are affected more by achievement motivation than later borns or vice versa. To state it more directly, we wanted to study whether there exists any joint effect of the two factors-ordinal position and achievement motivation-on jealous behaviour of adolescents.

As stated earlier Sewall (1930), Koch (1956), Bigner (1974), Dunn and Kendrick (1982), Neubauer (1983), and Sharma (1987) have found that first borns are more jealous than later borns. Separately, it has also been found that adolescents with high and low achievement motivation do differ in regard to their jealous behaviour (Heckhausen 1967; Atkinson and Raynor, 1978; and Bakhteyar Fatmi, 1990).

In the light of the above mentioned effects of ordinal position and achievement motivation on jealous behaviour of adolescents it was hypothesised that first born adolescents with high achievement motivation would be the most jealous while
later born adolescents with low achievement motivation would be the least jealous. More specifically, it was assumed that there would exist joint effect of ordinal position and achievement motivation on jealous behaviour of adolescents.

In order to test the aforesaid hypothesis, an F-ratio for interaction between ordinal position and achievement motivation was computed in a four-way analysis of variance (Table 16). The first order interaction between ordinal position and achievement motivation gave an F-ratio of 0.636 which is not significant at any acceptable level of confidence for 1 and 304 degrees of freedom. The insignificant interaction variance provides us with a statistical ground to accept the null hypothesis in this regard. In other words, the first born and the later born adolescents do not exhibit differential amount of jealousy due to their achievement motivation level.

A perusal of Table 22 reveals that the average jealous scores of first borns with high achievement motivation is 51.3875, of first borns with low achievement motivation is 50.8625, of later borns with high achievement motivation is 50.375 and of later borns with low achievement motivation is 48.525. The average difference between first borns and later borns with high achievement motivation is 1.0125 and between first borns and later borns with low achievement motivation is 2.3375 (Figure 7).

The same data also suggest that the average difference in jealous scores of first born adolescents with high and low achievement motivation is 0.525 and difference in jealous scores of later born adolescents with high and low achievement motivation is 1.850 (Figure 8).
It is clear that jealous behaviour of first borns and later borns does not vary considerably because of their achievement motivation level. In a nutshell, both the factors—ordinal position and achievement motivation—exert their effects on jealous behaviour of adolescents independently but do not exert their effects jointly. Hence, the results of the present research refute the assumption made in regard to the joint effect of ordinal position and achievement motivation on jealous behaviour of adolescents.
(III) JOINT EFFECT OF ORDINAL POSITION AND REWARD

Equally of interest is to study whether reward affects the jealous behaviour of first borns and later borns differentially. As has already been discussed earlier, first borns were found to be more jealous than later borns and similarly reward was found to exert its effect on jealous behaviour of adolescents. It was also considered important to probe whether jealous behaviour of first borns and later borns would vary because of the reward. The interaction effect between these two factors was tested in a four-way analysis of variance computed for the factors - ordinal position, sex, achievement motivation and reward (Table 16). The interaction between ordinal position and reward yielded an F-ratio of 0.9882 which is not significant at any acceptable level of confidence for 1 and 304 degrees of freedom, indicating thereby that first borns and later borns do not exhibit jealousy differentially because of non-reward and reward conditions.

A perusal of Table 23 reveals that average jealous scores of first borns in control (Non-Reward) condition is 47.825, of first borns in experimental (Reward) condition is 54.425, of later borns in control (Non-Reward) condition is 46.975 and of later borns in experimental (Reward) condition is 51.925. The average difference between first borns and later borns in control condition is 0.85 while in reward condition is 2.5 (Figure 9). The same data also suggest that average difference in jealous behaviour of first born subjects in control and experimental condition is 6.6 while of later born subjects in control and experimental condition is 4.95 (Figure 10).
A thorough analysis of obtained data reveals that though first born adolescents in reward condition exhibit the highest amount of jealousy while later born
adolescents in control condition exhibit the least jealousy, the insignificant F-ratio does not support the finding statistically.

In crux though there is a tendency of differential effect of reward on jealous behaviour of first born and later born adolescents as had been hypothesized, the difference does not stand to empirical test and hence the research hypothesis is refuted in this regard. That is, the two factors do not exert their effects jointly rather they are independent in regard to their effects on jealous behaviour of adolescents.

(IV) JOINT EFFECT OF SEX AND ACHIEVEMENT MOTIVATION

Equally of interest is to study whether achievement motivation affects jealous behaviour of males and females differentially. As has been discussed earlier, both the independent variables i.e., sex and achievement motivation were not found to exert their potential effect on jealous behaviour of the subjects. However, it was also considered important to probe whether jealous behaviour of males and females would vary because of their high and low level of achievement motivation. The interaction effect between these two factors was tested in a four-way analysis of variance computed for the factors-ordinal position, sex, achievement motivation and reward (Table 16). The interaction between sex and achievement motivation yielded an F-ratio of 0.545 which is not significant at any acceptable level of confidence for 1 and 304 degrees of freedom indicating thereby that males and females do not express jealous behaviour differentioly because of their achievement motivation level. In other words, it can also be said that subjects with high and with low achievement motivation do not differ in respect of their jealous behaviour due to their sexes.

A perusal of Table 24 reveals that average jealous scores of males and females with high achievement motivation are 51.80 and 49.9625, respectively (average difference of 1.8375, Figure 11). Similarly, average jealous scores of males and females with low achievement motivation are 50.00 and 49.387, respectively
The same data also suggest that average difference in jealous scores of male subjects with high and low achievement motivation is 1.80 and that of female subjects is 0.5755 (Figure 12).

The insignificant interaction F-ratio clearly indicates that these differences do not vary genuinely and thus reject the research hypothesis retaining the null
hypothesis in regard to joint effect of two independent variables i.e., sex and achievement motivation.

In crux, the obtained results do not support the hypothesis based on the proposed interaction model of the present research. It can be concluded that the two variables neither exert their effects independently nor jointly on jealous behaviour of adolescents.

(V) JOINT EFFECT OF SEX AND REWARD

It is also interesting to see whether reward affects males and females equally or males are affected more by reward than females in regard to their jealous behaviour. To state more clearly, we wanted to study whether males and females would exhibit their jealous behaviour equally or differentially because of non-reward and reward conditions.

As stated earlier Gesell and Ames (1956), Pressey and Kuhlen (1957), Jersild (1963), Garai (1968), Croak (1969), Praveen Lal et al., (1988) and Peretti et al., (1997) have found that females are more jealous, separately it has been found that reward has effect on jealous behaviour (Winter bottom, 1953; Duboss, 1954; Jones, 1954; Clifford, 1959; Vincent and Martin, 1961; and Witryol et al., 1965).

In the light of above mentioned effect of sex and reward, it was hypothesized that females in reward condition would be the most jealous while males in non-reward condition would be the least jealous. More specifically, it was assumed that effect of reward on jealous behaviour would be more in the case of females than in the case of males.

In order to test the aforesaid hypothesis, an F-ratio for interaction between sex and reward was computed in a four-way analysis of variance (Table 16). The first order interaction between sex and reward gave an F-ratio of 1.1116 which is not
significant at any acceptable level of confidence for 1 and 304 degrees of freedom. This insignificant interaction variance provides us with a statistical ground to conclude that male and female adolescents are not differentially affected by non-reward and reward conditions as regards to their jealous behaviour.

A perusal of Table 25 reveals that the average jealous scores of males in non-reward condition is 47.575 and of females in non-reward condition is 47.225 (average difference of 0.35, Figure 13). Similarly average jealous scores of males in reward condition is 54.225 and that of females is 52.125 (average difference of 2.10, Figure 13).

![Figure # 13: Obtained Average Difference Between Males And Females In Non-Reward And Reward Conditions](image)

The same data also suggest that the average difference in jealous scores of male subjects in control and reward conditions is 6.65 and that of females is 4.90 (Figure 14).
Figure # 14: Obtained Average Difference Between Non-Reward And Reward Conditions For Males And Females

It is clear that jealous behaviour of males and females does not increase differentially because of reward condition. As has already been discussed earlier in this chapter that males and females are not found to vary in regard to their jealous behaviour while the subjects in reward condition are found to exhibit considerable higher jealous behaviour than the subjects in non-reward condition. The insignificant interaction F-ratio, however, provides us empirical ground to believe that this specific effect of reward on jealous behaviour of the subject does not vary for males and females.

(VI) JOINT EFFECT OF ACHIEVEMENT MOTIVATION AND REWARD

Last first order interaction problem of the present study is whether subjects with high and low achievement motivation level would exhibit differential jealous behaviour in non-reward and reward conditions. It was hypothesised that there would
exist an interaction effect of achievement motivation and reward on jealous behaviour of adolescents. In other words, there would be differential effect of non-reward/reward conditions on jealous behaviour of subjects with differential achievement motivation levels.

The obtained interaction F-ratio (F=1.276, Table 16) for this purpose in a four-way analysis of variance for the factors-ordinal position, sex, achievement motivation and reward-is not significant at acceptable level of confidence for 1 and 304 degrees of freedom. The nonsignificant F-ratio clearly indicates that both the factors-achievement motivation and reward-are independent as regards to their effect on jealous behaviour of adolescents.

It is clear from Table 26 that average jealous scores of subjects with high achievement motivation in non-reward and reward conditions are 47.525 and 54.2375, respectively (average difference of 6.7125, Figure 15). Similarly, average jealous scores of subject with low achievement motivation in non-reward and reward conditions are 47.275 and 52.1125, respectively (average difference of 4.8375, Figure 15).
Figure # 15: Obtained Average Difference Between Non-Reward And Reward Conditions For Subjects With High And Low Achievement Motivation

The same data also reveal that average difference between subjects with high and with low achievement motivation in non-reward condition is 0.25 and in reward condition is 2.125 (Figure 16) and the variation in differences are found statistically insignificant in the present study.

Hence, it can be concluded that subjects with high and with low achievement motivation exhibit similar jealous behaviour in non-reward and reward conditions. This also suggests that the difference between non-reward and reward groups in respect of their jealous behaviour remains same for subjects with high and with low achievement motivation. We have seen above that the subjects with high and low achievement motivation do not differ in regard to their jealous behaviour. However, reward is found to exert its effect genuinely. The obtained insignificant interaction F-ratio, however, provides empirical base to believe that the two factors do not exert their joint effect on jealous behaviour of the subjects rather their effects are independent in this regard.
B. SECOND ORDER INTERACTION EFFECT

(I) JOINT EFFECT OF ORDINAL POSITION, SEX AND ACHIEVEMENT MOTIVATION

Upto now interaction effect of any two independent variables on jealous behaviour was discussed. The present research deals with four independent variables, giving us the opportunity to study the second order interaction effect also considering the interaction effect of three factors at a time on jealous behaviour of the adolescents. The specific problem here is to study the interaction effect of ordinal position, sex and achievement motivation on jealous behaviour of adolescents. The role of ordinal position in jealous behaviour is confirmed by several investigators (Sewall, 1930; Koch, 1956; Bigner, 1974; Dunn and Kendrick, 1982; Neubauer, 1983; and Sharma, 1987). Females have been found to be more jealous (Gesell and Ames, 1956; Pressey and Kuhlen, 1957; Jersild, 1963; Garai, 1968; Croake, 1969; Praveen Lal et al., 1988; and Peretti et al., 1997) and adolescents with high achievement motivation are found to be more jealous in comparison to those with low achievement motivation (Heckhausen, 1967; Atkinson and Raynor, 1978; and Bakhteyar Fatmi, 1990). The findings of the present research also go in the same direction in regard to the effect of ordinal position, however, sex and achievement motivation are not found to exert their effects on jealous behaviour of adolescents in the present research. Keeping in view of these independent set of findings of various researchers, it was expected that first born females with high achievement motivation would be most jealous while later born males with low achievement motivation would be the least. The other groups were expected to fall at intermediary positions. Thus, it was hypothesized that their would be a significant interaction effect among the three independent variables - ordinal position, sex and achievement motivation on jealous behaviour. To test this hypothesis the interaction F-ratio was computed (Table 16). The first of four second order interaction effect i.e., among ordinal position, sex and achieve-
ment motivation yielded an F-ratio of 3.229 which is not significant at any acceptable level of confidence for 1 and 304 degrees of freedom providing sufficient statistical ground to reject the research hypothesis. In other words, it can be said that there does not exist any genuine interaction effect among the three variables—ordinal position, sex and achievement motivation—on jealous behaviour of adolescents.

A perusal of Table 27 reveals that average jealous scores of first born males with high achievement motivation, first born females with high achievement motivation, first born males with low achievement motivation, first born females with low achievement motivation, later born males with high achievement motivation, later born females with high achievement motivation, later born males with low achievement motivation and later born females with low achievement motivation are 52.225, 50.55, 52.275, 49.45, 51.375, 49.375, 47.725 and 49.325, respectively giving an average difference between high and low achievement motivation groups, of 0.05 for first born males, of 1.10 for first born females, of 3.65 for later born males and of 0.05 for later born females (Figure 17).

![Average Difference in Jealous Scores](image)

**Figure # 17**: Obtained Average Difference Between High And Low Achievements Motivation Groups For First Born And Later Born Males And Females

Based on weightages (Table 1) as proposed in the present research it was
hypothesised that first born females with high achievement motivation would be the most jealous while the later born males with low achievement motivation would be the least jealous. First born males with high achievement motivation, later born females with high achievement motivation, first born females with low achievement motivation would occupy the second position and later born males with high achievement motivation, first born males with low achievement motivation and later born females with low achievement motivation would occupy the third position as regards to their jealous behaviour. However, the data obtained in the present research do not support the proposed model, that is, the variance for the eight sub-groups are different from the proposed differences and that too is not significant. In other words, it can be concluded that the effect of the three independent variables- ordinal position, sex and achievement motivation-are independent from each other as regards to their effects on jealous behaviour.

II) JOINT EFFECT OF ORDINAL POSITION, SEX AND REWARD

Another second order interaction effect considered in the present investigation is among ordinal position, sex, and reward. The specific problem is to study the effect of reward on jealous behaviour of first born and later born males and females. The findings pertaining to the effect of ordinal position and sex are stated above. Reward too has been found to play its vital role in relation to jealous behaviour (Winterbottom, 1953; Duboss, 1954; Jones 1954; Clifford, 1959; Vincent and Martin, 1967; and Witryol et al., 1965).

For the purpose of studying in the interaction of these three variables it was assumed that first born females in reward condition would be the most jealous while later born males in non-reward condition would be the least. The other groups were expected to fall at intermediatory position in this regard. In other words there would arise a considerable interaction effect among the three variables- ordinal position, sex and reward-on jealous behaviour of adolescents.
To test this hypothesis an interaction F-ratio was computed at second order level among the three variables. The obtained interaction F-ratio (F=2.122, Table 16) is not significant at any acceptable level of confidence for 1 and 304 degrees of freedom which provides sufficient statistical ground to refute the research hypothesis. In other words, it can be said that there does not exist any genuine interaction effect among the three variables-ordinal position, sex, and reward-on jealous behaviour of adolescents.

A perusal of Table 28 reveals that average jealous scores of first born males in non-reward and reward conditions are 48.45 and 56.05, of first born females in non-reward and reward conditions are 47.2 and 52.8, of later born males in non-reward and reward conditions are 46.7 and 52.4, and of later born females in non-reward and reward conditions are 47.25 and 51.45, respectively giving an average difference between non-reward and reward conditions of 7.6, 5.6, 5.7 and 4.2 for the respective sub-groups (Figure 18).

Figure # 18: Obtained Average Differences Between Non-Reward and Reward Conditions For First Born And Later Born Males And Females
The obtained insignificant F-ratio provides sound empirical ground to conclude that the three independent factors i.e., ordinal position, sex and reward exert their effects on jealous behaviour independently and not jointly as it was hypothesized.

(III) JOINT EFFECT OF ORDINAL POSITION, ACHIEVEMENT MOTIVATION AND REWARD

The third second order interaction problem of the present research is in relation to the joint effect of ordinal position, achievement motivation and reward on jealous behaviour of adolescents. Based on the findings of earlier researchers and the proposed interaction model in the present study, it was hypothesised that first born subjects with high achievement motivation in reward condition would exhibit highest degree of jealous behaviour while later born subjects with low achievement motivation in non-reward condition would exhibit the lowest degree of jealous behaviour. The other groups were expected to fall at intermediatory position in this regard. In other words it was hypothesized that the three variables would exert their joint effect on jealous behaviour of adolescents.

To test this hypothesis a second order interaction F-ratio was computed in a four-way analysis of variance (Table 16). The obtained F-ratio ($F=2.275$ Table-16 ) is not significant at any acceptable level of confidence for 1 and 304 degrees of freedom providing sound statistical ground to reject the experimental hypothesis. In other words, it can be said that there does not exist any considerable joint effect among the three variables-ordinal position, achievement motivation, and reward-on jealous behaviour of adolescents.

A perusal of Table 29 reveals that average jealous scores of first born subjects with high achievement motivation in non-reward and reward conditions are 47.575 and 55.2, of first born subjects with low achievement motivation in non-re-
ward and reward conditions are 48.075 and 53.65, of later born subjects with high achievement motivation in non-reward and reward conditions are 47.475 and 53.275, and of later born subjects with low achievement motivation in non-reward and reward conditions are 46.475 and 50.575, respectively giving an average difference between non-reward and reward conditions of 7.625, 5.575, 5.80 and 4.10 for the respective sub-groups (Figure 19)

![Graph showing obtained average differences between non-reward and reward conditions for different groups.](image)

**Figure # 19**: Obtained Average Differences Between Non-Reward And Reward Conditions For First Born And Later Born Subjects With High And Low Achievement Motivation

The obtained non-significant interaction F-ratio among the three variables i.e., ordinal position, achievement motivation and reward provides sound empirical ground to conclude that the three variables exert their effects on jealous behaviour of adolescents independently. Though the first borns and the subjects in reward condition were found to be more jealous and subjects with high achievement motivation were tended to be more jealous, these factors are not exerting their effects jointly as
was expected on the basis of proposed model in the present research.

(IV) JOINT EFFECT OF SEX, ACHIEVEMENT MOTIVATION AND REWARD

The last second order interaction effect considered in the present work is pertaining to the joint effect among the three variables—sex, achievement motivation and reward—on jealous behaviour of adolescents. Earlier researchers have indicated that females were more jealous than males, the subjects with high achievement motivation exhibited more jealous behaviour in comparison to those with low achievement motivation and reward too had been observed to play its vital role in jealous behaviour of adolescents. Based on the research findings and the proposed interaction model in the present work it was hypothesized that females with high achievement motivation in reward condition would be the most jealous while males with low achievement motivation in non-reward condition would be the least. The other groups would fall at intermediary positions in this regard. In other words, it was assumed that there would be a genuine interaction effect among the three variables—sex, achievement motivation and reward.

To test this hypothesis an interaction F-ratio was computed in a four-way analysis of variance (Table 16). The obtained interaction F-ratio among the three variables is 4.349 and significant at .05 level of confidence for 1 and 304 degrees of freedom.

This significant interaction F-ratio provides sound statistical ground to retain the experimental hypothesis. In other words, it can be said that there exists a genuine interaction effect among the three variables—sex, achievement motivation and reward—on jealous behaviour of adolescents.

A persual of Table 30 reveals that average jealous scores of males with high achievement motivation in non-reward and reward conditions are 47.425 and
56.175 of males with low achievement motivation in non-reward and reward conditions are 47.725 and 52.275, of females with high achievement motivation in non-reward and reward condition are 47.625 and 52.3 and of females with low achievement motivation in non-reward and reward conditions are 46.825 and 51.95 respectively, giving average difference between non-reward and reward conditions of 8.75, 4.55, 4.675 and 5.125 for the respective sub-groups (Figure 20)

**Figure # 20:** Obtained Average Differences Between Non-Reward And Reward Conditions For Males and Females With High And Low Achievement Motivation

Based on weightages (Table 1) as proposed in the present research it was hypothesized that females with high achievement motivation in reward condition would be the most jealous while males with low achievement motivation in non-reward condition would be the least jealous. Females with high achievement motivation in non-reward condition, males with high achievement motivation in reward condition, females with low achievement motivation in reward condition would occupy the second position and males with high achievement motivation in non-reward condition, fe
males with low achievement motivation in non-reward condition and males with low achievement motivation in reward condition would occupy the third position as regards to their jealous behaviour. However, the data obtained in the present research do not support the proposed model. Though the interaction effect is significant, the variance for the eight sub-groups are different from the proposed differences. Looking at earlier first order and second order interaction effects which were found insignificant, this finding of significant F-ratio opens the room for further elaboration in this concern.

**C. THIRD ORDER INTERACTION EFFECT**

**(1) JOINT EFFECT OF ORDINAL POSITION, SEX, ACHIEVEMENT MOTIVATION AND REWARD**

As has already been stated earlier, in the present research the author intends to seek the relationship between four independent variables i.e., ordinal position, sex, achievement motivation and reward on the one hand and jealous behaviour on the other hand. The specific problem here is to study the effect of reward on jealous behaviour of first born/later born male and female adolescents with high and low achievement motivation. The roles of these four independent variables were confirmed by several investigators as stated earlier in this chapter. The findings of the present research also go in the same direction in the case of ordinal position and reward. However, sex and achievement motivation were not found to play any vital role in this regard. Keeping in view of these independent set of findings and the proposed interaction model of the present research, it was expected that first born females with high achievement motivation in reward condition would be the most jealous, while later born males with low achievement motivation in non-reward condition would be the least jealous. The other groups were expected to fall at intermediary positions in respect of their effect on jealous behaviour of the adolescents. In other words, it was
hypothesized that there would arise a significant interaction effect among the four variables-ordinal position, sex, achievement motivation and reward in regard to jealous behaviour of adolescents.

To test this hypothesis a third order interaction F-ratio was computed (Table 16). The obtained F-ratio ($F=5.4716, P<.05$) is significant at .05 level of confidence for 1 and 304 degrees of freedom which provides sufficient statistical ground to retain the research hypothesis. In other words, it can be said that there exists a genuine interaction effect among the four independent variables-ordinal position, sex, achievement, motivation and reward-on jealous behaviour of adolescents.

A perusal of Table 15 reveals that average jealous scores of first born males with high achievement motivation in non-reward and reward conditions are 47.20 and 57.25; of first born males with low achievement motivation in non-reward and reward conditions are 49.70 and 54.85; of first born females with high achievement conditions in non-reward and reward conditions are 47.95 and 53.15, of first born females with low achievement motivation in non-reward and reward conditions are 46.45 and 52.45; of later born males with high achievement motivation in non-reward and reward conditions are 47.65 and 55.10; of later born males with low achievement motivation in non-reward and reward conditions are 45.75 and 49.70; of later born females with high achievement motivation in non-reward and reward conditions are 47.30 and 51.45; and of later born females with low achievement motivation in non-reward and reward conditions are 47.20 and 51.45; respectively giving average difference between non-reward and reward conditions of 10.05, 5.15, 5.20, 6.00, 7.45, 3.95, 4.15 and 4.25 for the respective sub-groups (Figure 21).
Figure # 21: Obtained Average Differences Between Non-Reward and Reward Conditions For First Born And Later Born Males And Females With High And Low Achievement Motivation

Based on weightages (Table 1) as proposed in the present research it was hypothesized that first born females with high achievement motivation in reward condition would exhibit the highest degree of jealous behaviour while the later born males with low achievement motivation in non-reward condition would exhibit the lowest degree of jealous behaviour. The other subgroups would occupy their respective posi-
tions on the basis of their weights in the same regard. However, the data obtained in the present research do not support the proposed model. Though the interaction effect is significant, the variance for the sixteen subgroups are different from the proposed differences, demanding further research to throw more light on this aspect.