The present investigation deals with the effect of three variables: field dependence/independence, locus of control and induced frustration on retention. The obtained data were analyzed through appropriate statistics in the previous chapter. The results are discussed in the present chapter as well as the one to follow. The discussion has been divided into two parts. One is based on retention in relation to field dependence/independence, locus of control and induced frustration. This will form the content of the present chapter. The second part concerns the interaction effect among the three independent variables as regards to retention. The next chapter is devoted to discussing this aspect.

EFFECT OF INDIVIDUAL FACTORS

In the present study data were collected to study the retention of subjects: field-dependents and field-independents, internals and externals, and in control and induced frustration conditions. The retention was studied with the help of an unseen passage of 50 words. Retention scores were calculated on the basis of rightness and place of the recalled word.

1. Retention In Relation To Field Dependence/Independence: It has been assumed that retention would be related to field dependence/independence aspect of the personality, i.e., field-independent would be better retainer than the field-dependents. A perusal of Table 10 show that average retention scores of field-dependents is 72.56 and that of field-independents is 77.93 (Figure 2). Significance of this difference between the groups in the respect of their retention was tested statistically while computing three-way ANOVA including two other factors: locus of control and induced frustration (Table 11). The obtained F-ratio for difference in retention scores of field-dependents and -independents is 33.30 which is significantly higher than those expected from chance fluctuations, the confidence level being 0.01 for 1 and 232 degrees of freedom. This significant F-ratio provides solid ground to retain our hypothesis regarding the difference in retention of field-dependents and independents rejecting the Null hypothesis.
in this regard. The difference between field-dependents and field-independents as regards to their retention performance has also been checked statistically with the help of computing eight CRs for the comparison between field-dependent internals versus field-independent internals (disregarding experimental conditions), field-dependent externals versus field-independent externals (disregarding experimental condition), field-dependent internals versus field-independent internals (in control condition), field-dependent internals versus field-independent internals (in experimental condition), field-dependent externals versus field-independent externals (in control condition), field-dependent externals versus field-independent externals (in experimental condition), field-dependents versus field-independents in control condition (disregarding locus of control) and field-dependents versus field-independents in experimental condition (disregarding locus of control).

![Average Retention Scores Of Field-Dependents and Field-Independents](image)

**Figure 2: Average Retention Scores Of Field-Dependents and Field-Independents.**

Average retention scores of these comparable groups and the obtained CRs also with their level of significance are given in Table 12. It is clear from the Table 12 that all the comparisons except between field-dependent internals versus field-independent internals in control condition (disregarding locus of control) are significant at either 0.05 or 0.01 level of confidence. These significant CRs also provide sufficient statistical ground to retain the experimental hypothesis for the difference in field-dependents and independents in respect of their retention performance rejecting the Null hypothesis in the regard. It is
in almost all the comparisons the field-independents excelled the field-dependents (Figures 3, 4, 5, 6, 7, 8, 9, 10).

**Figure 3:** Average Retention Scores Of Field-Dependent Internal & Field-Independent Internals.

**Figure 4:** Average Retention Scores Of Field-Dependent Externals & Field-Independent Externals.
Figure 5: Average Retention Scores Of Field-Dependent Internals & Field-Independent Internals (In Control Condition)

Figure 6: Average Retention Scores Of Field-Dependent Internals & Field-Independent Internals (In Experimental Condition)
Figure 7: Average Retention Scores Of Field-Dependent Externals & Field-Independent Externals (In Control Condition)

Figure 8: Average Retention Scores Of Field-Dependent Externals & Field-Independent Externals (In Experimental Condition)
Figure 9: Average Retention Scores Of Field-Dependents & Field-Independents In Control Condition (Disregarding Locus Of Control)

Figure 10: Average Retention Scores Of Field-Dependents & Field-Independents In Experimental Condition (Disregarding Locus Of Control)
Hence, it can be said that the excellence of field-independents over field-dependents is true. In other words, it can be said that the field-independent subjects retain more from an unseen passage as compared to those subjects who are field-dependents. This is in line with the findings of Davis and Frank (1979), Brooks and Dansereau (1961), Piotrowski (1984), Roberts and Park (1989), Carrié et al. (1984), Collins et al. (1986) that field-independents genuinely outperformed the field-dependents on retention test. Field-dependents are those who cannot shake themselves free from the constraints of the situation in which they find themselves. In general, they are very dependent on environmental supports; they lack ability to initiate, are passive in many respects; and submit readily to the forces of authority; they are not insightful regarding their inner lives and fear their own aggressive and social impulses; they tend to have low self-esteem and low self-acceptance. By contrast, the field-independent subjects do not demand environmental supports; they have initiative and organizing ability; they are active and want to achieve, they are aware of their own inner lives and accept their impulses even while they have good control over them; they have high self-esteem and self-acceptance. It has been found (Rudin and Stagner, 1958) that the individuals who have trouble in separating figure from ground (field-dependents) also have difficulty in maintaining the stable identity or a stable perception of the identity of others. Wertheimer and Mednick (1958) observed that more field-dependents were characterized by a passive acceptance of the environment, whereas more field-independents subjects expressed an active coping in dealing with the environment. Witkin and Goodenough (1977) concluded that field-independent people emerge as a possessing the necessary qualities in the cognitive domain; and an ability to analyze the environment into its components and make use of this information selectively. Witkin et al. (1967) and Goodenough (1978) argue that field-independents learn easily because they tend to make greater use of mediators. Field-dependents either cannot or do not impose structure on material and thus need an external source of structure. Similarly, Davis and Frank (1979) has suggested that field-dependent and independent learners differ more in the process they use and greater effectiveness of independent learners is related to memory efficiency and the ability to conduct combinational analysis and that high information load, greater interference potential and less subjective organization are the factors that contribute to a less efficient memory of field-dependent learners.

In the present investigation the field-independents have excelled the field-dependents significantly (Average difference of 5.37). The subjects had learned
an unseen passage and had to recall after retention interval of five minutes. A passage can be considered as the complex of many grammatically and meaningfully associated words and sentences. The models of human memory proposed by Anderson and Bower (1973) and Kintsch (1974) also describe the process of encoding a sentence as drawing upon two types of information; (1) Syntax-knowledge of the structure of linguistic expression, grammatical as well as lexical information; and 2) Sentence-knowledge of objects and their relations used to determine the reference of the expression. Looking at the specific characteristics of field-independents, it can be very well reasoned that because of their better cognitive ability and analyzing the information without any external support they did retain the passage better as compared to those who were field-dependents. The inferior performance of the field-dependents in respect of their retention in comparison to the field-independents can also be due to motivational aspect. The field-dependents lack the ability to initiate, are passive in many respects and they tend to have low self-esteem and low self-acceptance. These qualities hinders the field-dependents desire for achievement on any task.

Contrary to this the field-independents have initiative and organizing ability, they are active and want to achieve and they have high self-esteem and self-acceptance which tend them to be keen and conscious about their achievement on any task. Moreover, since recall of the passage requires the ability to organize various independently linked words and sentences and certainly the field-independents being the better organizer and having better cognitive ability to conduct combinational analysis and having efficient memory are in position to be a better retainer than the field-dependents who lack these abilities and who load themselves with unnecessary informations have greater interference potential and less subjective organization which prevent them of making combinational analysis which is an utmost requirement of retention of sentences.

(2) Retention In Relation To Locus Of Control: It has been expected that internals would out perform the externals on a retention task of recalling a learned passage. It is clear from Table 13 that average retention score of internals is 77.03 and that of externals is 73.46 (Figure 11). The difference between the two groups in the respect of their retention in favor of internals was tested statistically while computing a three-way ANOVA along with two other factors i.e., field dependence/independence and induced frustration (Table 11). The obtained F-ratio for the difference in retention scores of internals and externals is 14.69 which is significant at .01 level of confidence for 1 and 232 degrees
of freedom. This significant F-ratio proves the research hypothesis regarding the difference in retention of internals and externals, rejecting the Null hypothesis in this regard.

Figure 11: Average Retention Scores Of Internals And Externals

As in the case of field dependence/independence here also eight CRs were calculated to observe the significance of difference between the average retention scores of internals and externals: comparisons between internals field-dependents and external field-dependents (disregarding experimental condition), internal field-independents and external field-dependents (disregarding experimental conditions), internal field-dependents and external field-dependents (in control condition), internal field-dependents and external field-dependents (in experimental condition), internal field-independents and external field-independents (in control condition), internal field-independents and external field-independents (in experimental condition), internals and externals in control condition (disregarding field dependence/independence) and between internals and externals in experimental condition (disregarding field dependence/independence). Average retention scores of these comparable groups and the obtained CRs along with their level of significance are given in Table 14 and figures 12, 13, 14, 15, 16, 17, 18, 19 that all the comparisons except between internals versus externals (in experimental condition) and internal field-dependents versus external field-dependents (disregarding experimental conditions) are significant at either .05 or .01 level of confidence.
Figure 12: Average Retention Scores Of Internal Field-Dependents & Externals Field-Dependents (Disregarding Experimental Conditions)

Figure 13: Average Retention Scores Of Internal Field-Independents & External Field-Independents (Disregarding Experimental Conditions)
Figure 14: Average Retention Scores Of Internal Field-Dependents & External Field-Dependents (In Control Condition)

Figure 15: Average Retention Scores Of Internal Field-Dependents & External Field-Dependents (In Experimental Condition)
Figure 16: Average Retention Scores Of Internal Field-Independents & External Field-Independents (In Control Condition)

Figure 17: Average Retention Scores Of Internal Field-Independents & External Field-Independents (In Experimental Condition)
Figure 18: Average Retention Scores Of Internals & Externals In Control Condition (Disregarding Field Dependence/Independence)

Figure 19: Average Retention Scores Of Internals & Externals In Experimental Condition (Disregarding Field Dependence/Independence)
These significant CRs also provide sufficient statistical ground to retain the experimental hypothesis for the difference in internals and externals in respect of their retention performance rejecting the Null hypothesis in the regard. It is also clear that in almost all comparisons the internals excelled the externals. In other words, it can be said that the subjects with the internal locus of control retain more from an unseen passage compared to those subjects who are with the external locus of control. The findings of Doctor (1971), Segal (1974), Standahl (1975), Mitchell and Young (1979), Saunders and Yeany (1979), Saunders et al. (1981), Abatso (1982), Ellis and Franklin (1983), Thal et al. (1983), Piotrowski (1984), Frankel (1985), Beaute and Mckelvie (1986), Benson and Yeany (1986), Brooks and Mckelvie (1986) and Hagberg et al. (1991) also show that subjects with internal locus of control are better retainer than subjects with external locus of control. Internal control refers to instrumental behavior that one believes is related casually to desired reinforcers. Internal control refers to reinforcement unrelated to one's behavior. People who are relatively internal believe they are responsible for their destiny, whereas people who are relatively external believe the good and bad things that happen to them are determined by luck, chance or powerful others. In a study by Segal (1974) the inferior performance of external locus of control subjects on achievement test has been attributed to cognitive and perceptual deficiencies of the externals. It has been found (Martorella, 1979), that internals when compared to externals were more prone to the aware of informational strategies for successful completion of task, less susceptible to experimenter's influence and more superior retention/recognition in non-stressful situations. Feather and Volkmer (1988) found that externals tended to have higher test anxiety score than internals. Being high test anxious externals may hamper their own performance in the testing situation or to say may show poor retention. Abatso (1982) concluded that coping strategies were related to achievement and that achievement significantly influence retention. They have observed that students who persisted (internals) had learned personality attitudes that gave them a sense of control over events. Mitchell and Young (1979) have attributed higher intrinsic motivation in the internals as the cause for better retention as compared to the externals. Ellis and Franklin (1983) had interpreted the inferior performance of external in terms of differences in case of distraction with externals being less able to distinguish relevant semantic from less pertinent perceptual features. Thal et al. (1983) concluded that externals tend to encode stimuli in more superficial ways than internals do, causing the difference between the two in respect of their retention.
In the present research the internals have excelled the externals significantly (average difference of 3.64). As it has already been mentioned that subjects required to learn an unseen passage and recalled after the retention interval of five minutes. Also when the two groups i.e., internals and externals of various sub-groups had been compared, the excellence of internals over externals is found undoubtful. Being having better control over the condition around them and having low test anxiety, the internals are prone to be better retainer than the externals. Moreover, the externals encode stimuli in more superficial ways than the internals and hence less able to distinguish relevant semantic from the perceptual features. It is reasonable to conclude that to learn and recall an unseen passage the subject certainly requires more efficient cognitive ability which is lacking in the externals because of their specific characteristics as mentioned above. Because of superficial encoding and inability to distinguish relevant semantics from the passage, the externals are unable to retain the passage as efficiently as the internals who because of their deep analysis, and ability to distinguish relevant semantic from the passage are able to retain the learned material more efficiently. Moreover, the internals are full of intrinsic motivation which may also be attributable to their better retention as compared to the externals who lack intrinsic motivation for achievement.

(3) Retention In Relation To Induced frustration: The third important independent variable dealt in the present investigation is induced frustration in respect of its effect on retention. It was hypothesized that under the condition of induced frustration (experimental group) the subjects would perform poorer on a retention task in comparison to who were not frustrated (Control group). It is clear from Table 13 and 15 that average retention score of control group is 79.48 while that of experimental group is 67.45. It is evident that subjects of control group who were not frustrated in the experimental situation outperformed (average difference of 12.03. Figure 20) the subjects of experimental group in whom frustration was induced in the experimental situation by giving negative remarks during the retention interval while working on a simple and easy task of making a chain with the help of 'U' pins.

The significance of this difference between the control and the experimental groups was tested by computing a three-way ANOVA including two other independent variables: field dependence/independence and locus of control. The obtained F-ratio for the difference (F=272.72, P<.01, Table 11) is significant at .01 level of confidence for 1 and 232 degrees of freedom. The significant of this difference
between the two groups i.e., control (non-frustrated) and experimental (frustrated) was also tested by computing CRs for different comparable sub-groups: field-dependents in control versus field-dependents in experimental (disregarding locus of control), field-independents in control versus field-independents in experimental (disregarding locus of control), internals in control versus internals in experimental (disregarding field dependence/independence), externals in control versus externals in experimental (disregarding field dependence/independence), field-dependent internals in control versus field-dependent internals in experimental, field-independent internals in control versus field-independent internals in experimental, field-dependent externals in control versus field-dependent externals in experimental and field-independent externals in control versus field-independent externals in experimental.

![Figure 20: Average Retention Scores Of Control Group (Frustrated) & Experimental Group (Non-Frustrated)](image)

The average retention scores of all the comparable groups and the obtained CRs for the difference along with level of significance are given in Table 16 and figures 21,22,23,24,25,26,27,28. It is clear that in almost all the subjects in control group excelled the subjects in experimental group as regards to their retention performance. All the obtained CRs (Table 16) except for comparison between field-independent externals in control and field-independent externals in experimental are significant at .01 level of confidence.
Figure 21: Average Retention Scores Of Field Dependents In Control Condition & Field Dependents In Experimental Condition (Disregarding Locus Of Control)

Figure 22: Average Retention Scores Of Field Independents In Control Condition & Field Independents In Experimental Condition (Disregarding Locus Of Control)
Figure 21: Average Retention Scores Of Field Dependents In Control Condition & Field Dependents In Experimental Condition (Disregarding Locus Of Control).

Figure 22: Average Retention Scores Of Field Independents In Control Condition & Field Independents In Experimental Condition (Disregarding Locus Of Control).
Figure 25: Average Retention Scores Of Field Dependent Internals In Control Condition And Field Dependent Internals In Experimental Condition

Figure 26: Average Retention Scores Of Field Independent Internals In Control Condition And Field Independent Internals In Experimental Condition
Figure 27: Average Retention Scores Of Field Dependent Externals In Control Condition And Field Dependent Externals In Experimental Condition

Figure 28: Average Retention Scores Of Field Independent Externals In Control Condition And Field Independent Externals In Experimental Condition
These significant F-ratio and CRs provide ample statistical ground to retain the experimental hypothesis refuting the Null hypothesis of no difference. In other words, it can be said that the retention performance of the frustrated subjects is genuinely inferior to the non-frustrated subjects. More specifically, frustration induced in the subject in experimental situation truly hamper the performance of the subject on retention task i.e., a negative effect is being exerted by induced frustration on retention potential of the subjects.

According to Freud (1920), "Frustration occurred whenever pleasure-seeking or pain avoiding behavior was blocked". Sears (1941) defined frustration as a condition which exist when goal response suffers interference while Amsel (1962) defines frustration as a conceptualization of a hypothetical implicit reaction elicited by non reward after a number of prior rewards. The failure to receive an anticipatory reward produces a primary emotional frustration reaction which, in interaction with the prevailing condition is a important determinant of the organism's subsequent behavior in the face of non-reward (Amsel 1958, 1962, 1967).

Here, the frustration reaction is assumed to be elicited not by non reward per se but by failure to receive an anticipated reward. One consequence of the primary frustration reaction is the immediate disruption of the learned behavior. The effects are generally deleterious in this regard. Barker et al. (1941) found a depressive tendency following frustration situation. Child and Waterhouse (1952) have suggested that this deleterious effect of frustration is due to the generation of competing responses, either conditioned or unconditioned. D'Zurilla (1965) opined the increase in amount of conflicting cognitive events is attributable to the reduced efficiency of recall in the frustrated subjects. The lowering of performance of the frustrated group may also be attributed to the feeling of failure.

In the present investigation the frustration was induced in the subjects of experimental group with the help of negative remarks while the subjects were working on a simple task during the retention interval after learning an unseen passage. It can be reasoned very well that this condition of being punished instead of getting reward on a simple and easy task of preparing chain with the help of 'U' pins must have induced the frustration in the subjects receiving the negative remarks. This must have raised a feeling of apprehension leading to cognitive conflict regarding one's intellectual ability on other difficult task of retaining an unseen passage leading to poorer recall. Contrary to this
the subjects of control group who had not been frustrated performed better on retention task because of absence of such deleterious effects of frustration. Moreover, as Child and Waterhouse (1952) suggest that the frustrating condition leads to competing responses ultimately hampering the consequent performance. It may be possible that the subjects in the experimental group who were made frustrated during the retention interval after learning an unseen passage must have failed to retain the semantic cues necessary for sentence memory because of generation of certain competing responses leading to poorer recall as compared to those who were not frustrated while working on the similar task during the retention interval. Motivational aspect of the frustration also can not be ignored as the frustrated subjects may have low intrinsic motivation to achieve on the subsequent task (recall of learned passage) because of being declared failure by the experimenter on rather a simpler task during retention interval.

(4) Relative Roles Of Independent Variables In Relation To Retention: Ascertaining the relative roles of the three independent variables (field dependence/independence, locus of control and induced frustration) in relation to the dependent variable (retention) was also considered of vital importance in the present research. The author intends to determine the relative importance of these three independent variables as regards to the retention performance of the subjects. More specifically, it was also considered very important to ascertain the contribution of the three independent variables dealt in the present research to the variance of retention.

For the purpose, multiple $R$ in terms of beta coefficients has been computed taking into consideration retention as dependent variable, field dependence/independence and locus of control as the independent variables. The obtained results of the regression analysis are summarized in Table 17.

$R_{1}^{2}$ (23) in Table 17 gives the proportion of the variance of the criterion measure ($X_{1}$-Retention) attributable to the joint action of the variable ($X_{2}$ and $X_{3}$-field dependence/independence and locus of control). As shown in the Table $R_{1}^{2}(23) = .63$; and accordingly, 63% of whatever makes subjects differ in retention can be attributed to differences in field dependence/independence and locus of control. By means of formula (Garrett, 1966) $R_{1}^{2}$ (23) = $\beta_{123}$ $r_{12}$ + $\beta_{132}$ $r_{13}$, the total contribution of 0.63 can be broken down further into the independent contribution of $X_{2}$ (field dependence/independence) and $X_{3}$ (locus of control). Thus, from the equation $R_{1}^{2}$ (23) = .19 + .44, we know that 19% is the contribution of field dependence/independence to the variance of retention, and 44% is the contribution of locus of control, the remainin...
37% of the variance of $X$, (retention) must be attributed to other factors.

A: Field Dependence/Independence (19%); B: Locus Of Control (44%); C: Induced Frustration & Other Factors (37%).

*Figure 29: Contribution Of Three Variables In Relation To Retention.*

In the present investigation an important factor of induced frustration was also undertaken, since measurement of this experimental manipulation was not done, it could not be possible to ascertain its attribution to retention. However, looking at the large difference between the control (non-frustrated) and experimental (frustrated) group in respect of their performance it can be presumed that a significant proportion of remaining 37% contribution, can be attributed to induced frustration (Figure 29).