

CHAPTER V

FACTORIAL STUDY OF PERSONALITY, ATTITUDES AND CREATIVITY OF INSERVICE TEACHERS AND STUDENT TEACHERS

Introduction

In order to establish theoretical systems, identification and measurement of some basic variables cannot, perhaps, be overemphasized. Classificatory categories which can be described and measured have been set up almost by every field of science. "Factor analysis", writes Fruchter (1967), "starts with a set of observations obtained from a given sample by means of such a priori measures." It is a valuable method for sorting many correlated measures into fewer, more manageable, independent dimensions. Guilford (1967) is more specific when he writes, "in psychology and the social sciences, where the number of potential variables is very large and the useful variables that we need for economical and dependable descriptive purposes are overlaid with multiplex manifestations, the demand for some method that will facilitate the discovery of those underlying variables is very great. It is in the fulfilment of this objective that we find factor-analysis method to be of greatest value." In short, factor analysis does not yield a portrait of basic human traits but only a simplified picture of the relations that exist among the test items or independent tests submitted to the factor analysis in the first place.

Factor analysis does not necessarily reveal the 'real' characteristics of the persons or objects being measured, it may allow better description but it does not discover underlying traits. The main thrust of factor analysis "is the desire to reduce the number of variables with which one operates, (Guilford, 1978).

It would be recalled that Cattell's (1964) Sixteen Personality Factor Test (Form A), Khatena's (1971) creativity measure Something About Myself (SAM) comprising of six factors plus a total score and Minnesota Teacher Attitude Inventory (MTAI) (Cook, Leeds and Callis, 1951) producing only one direct measure, were administered to 180 inservice teachers and 180 student teachers, specialising in the teaching of Science, Arts, and Commerce subjects. Each group consisted of 60 subjects. It was hypothesized that when scores derived from the above measures were factor analyzed, different factors would characterize the various groups of inservice teachers and student teachers. The following data, their interpretation and discussion would provide a verification of the hypothesis stated above.

In general there is no known method of establishing the statistical significance of a factor loading which is the correlation of a variable with a factor. However, loadings of .30 and above are usually interpreted. Guilford (1978, p.508) too advises to ignore values below .10 or more in practical situations and treat them as zero loadings. On some occasions even larger loadings may be tolerated as zero, particularly

when the experimental sample is small. "Small" may be defined here as being less than 200. It is, therefore, proposed in the present instance to concentrate on loadings of .30 and above.

List of Variables

The following twenty four variables were involved in factor analysis :

16 PF

1. Reserved Vs. Outgoing (A)
2. Less Intelligent Vs. More Intelligent (B)
3. Less Stable Vs. More Stable (C)
4. Submissive Vs. Dominance (E)
5. Sober Vs. Happy-Go-Lucky (F)
6. Expedient Vs. Conscientious (G)
7. Shy Vs. Venturesome (H)
8. Toughminded Vs. Tenderminded (I)
9. Trusting Vs. Suspicious (L)
10. Practical Vs. Imaginative (M)
11. Forthright Vs. Shrewd (N)
12. Placid Vs. Insecure (O)
13. Conservative Vs. Experimenting (Q_1)
14. Group Dependent Vs. Self Sufficient (Q_2)
15. Uncontrolled Vs. Controlled (Q_3)
16. Relaxed Vs. Tense (Q_4)

Something About Myself (SAM)

17. Environmental Sensitivity
18. Initiative
19. Self Strength
20. Intellectuality

- 21. Individuality
- 22. Artistry
- 23. Creativity*

Attitude Towards Teaching

- 24. Minnesota Teacher Attitude Inventory (MTAI)

Sixteen Personality Factor Questionnaire

The following names of the positive poles in 16 PF Questionnaire were taken into consideration, by and large, in naming the various factors of the Personality Factor Scale (Cattell) :

- (A) Friendliness, warm, sociability;
- (B) Intelligence;
- (C) Stability, Ego Strength;
- (E) Dominance, Aggressive, Competiveness;
- (F) Surgency, Enthusiastic;
- (G) Conscientiousness;
- (H) Adventurous, Venturesome;
- (I) Sensitivity, Aesthetically Sensitive;
- (L) Suspiciousness, Paranoid Tendencies;
- (M) Unconventionality;
- (N) Shrewdness, Sophistication;
- (O) Insecurity, Guilt Proneness (Anxiety);
- (Q₁) Radicalism;
- (Q₂) Self-sufficiency, Resourceful;
- (Q₃) Self-Discipline;
- (Q₄) Tenseness, id pressure.

* This is not the summated score of the six factors of the inventory. Items not falling in the six factors were also included for scoring purposes in the creativity dimension.

SECTION A

COMPARATIVE STATEMENT OF THE FACTOR CLUSTER OF VARIABLES IN INSERVICE TEACHERS & STUDENT TEACHERS

The significant observation of Getzels and Jackson (1963) that ".... there is the limitation of treating teachers... teachers of English and Science - as a single group," has received scant attention in teacher education research. The main thrust of the conclusions arrived at in the previous chapter, by and large, demonstrate the hypotheses that there are significant differences between inservice teachers and student teachers, between inservice teachers of various specialisations among themselves and between inservice teachers and student teachers of various specialities like Science, Arts and Commerce. Do different factors also characterize the groups specified above? The following factor-wise statement of cluster of variables for the various groups is given in the following sections.

Identification of Factors

The factors which have been identified on the basis of factor analysis for the total group of inservice teachers and total student teachers are listed below :

<u>Factor</u>	<u>Inservice Teachers</u>		<u>Student Teachers</u>
A	Creative Environmental Sensitivity	Vs.	Self Confident Creative Teaching Attitude
B	Paranoid Unconventionality	Vs.	Convergent Intellectuality
C	Warmhearted Enthusiasm	Vs.	Self-Sufficient Adventurism
D	Socially Precise Individuality	Vs.	Socially Precise Naivete
E	Initiative	Vs.	Surgency
F	Positive Teaching Attitude	Vs.	Artistic Creativity
G	Stable Dominance	Vs.	Stable Conscientiousness
H	Venturesomeness	Vs.	Imaginativeness
I	Shrewd Experimentation	Vs.	Freethinking Experimentation
J	Creative Self-strength	Vs.	Suspiciousness
K	Insecurity		---

Contd.

Factor A

Table 57.1

Factor A

Creative Environmental Sensitivity Vs.
Self-Confident Creative Teaching Attitude

Variables	Description	Teachers	Students
17	Environmental Sensitivity	.724	-
19	Self-Strength	-	.733
20	Intellectuality	.433	.432
21	Individuality	.396	.383
23	Creativity	.877	.577
24	MTAI	-	.579

Factor A for inservice teachers has a very high loading of .877 on variable 23 measuring creativity, followed by an almost equally high loading of .724 on variable 17 measuring Environmental Sensitivity. On variables 20 and 21 measuring Intellectuality and Individuality the loadings are .433 and .396, respectively. Hence this factor can be designated as Creative Environmental Sensitivity.

On the other hand factor A for the student teachers has a very high loading of .733 on variable 19 measuring Self Strength, followed by a rather high loading of .579 on variable 24 measuring Teaching Attitude (MTAI), and this is followed

again by a rather high loading of .577 on variable 23 measuring Creativity. On variables 20 and 21 measuring Intellectuality and Individuality there are loadings of .432 and .383. In fact, all these variables : 19, 20, 21 and 23 are the various dimensions of creative potential. Variable 24 MTAI, is also going with variable 19, Self Strength, which is absent from the inservice teachers group. Hence this factor has been termed as Self-Confident Creative Teaching Attitude.

The inservice teachers have an overall creative potential and have environmental sensitivity in that they are open to the ideas of others, are interested in the beautiful and humorous aspects of experiences and have sensitivity to meaningful relations. They have intellectual curiosity and enjoy challenging tasks, have preference for adventure over routine and do not like to do the things in the prescribed way. Besides, they prefer to work alone rather than in a group and are critical of others. They are prepared to work for long hours without getting tired.

The picture for the student teachers would be that they possess self-confidence, are resourceful, versatile and willing to take risks and have a desire to excell in organisational abilities. They have progressive attitudes towards teaching characterized by affection and understanding of their pupils. Situations requiring disciplinary action would rarely arise. Common goals and common understandings would characterize teacher-pupil relations. Besides they have intellectual curiosity and prefer challenging tasks, disliking to do things

in a routinized manner. They are themselves as self-starters, prepared to work for long hours without getting tired. For the student teachers self-confidence, creativity, intellectuality and individuality are favourable to a creative dynamic teaching attitude. For the teachers such a phenomenon is not present.

Factor B

Table 57.2

Factor B

Paranoid Unconventionality Vs. Convergent Intellectuality

Variable	Description	Teachers	Students
2	Less Intelligent Vs. More Intelligent (B)	-	.729
4	Submission Vs. Dominance (E)	-	.547
9	Trusting Vs. Suspicious (L)	.659	-
10	Practical Vs. Imaginative (M)	.606	-
12	Placid Vs. Insecure (O)	-	.382
14	Group Dependent Vs. Self-Sufficient (Q ₂)	-.434	-
16	Relaxed Vs. Tense (Q ₄)	-.401	-

This factor for the inservice teachers has a high loading of .659 on variable 9 measuring trait L (Trusting Vs. Suspicious), followed by an equally high loading of .606 on variable 10 measuring trait M (Practical Vs. Imaginative). On variables 14 and 16 measuring traits Q₂ (Group Dependent Vs. Self-sufficient) and Q₄ (Relaxed Vs. Tense) there are negative

loading of $-.434$ and $-.401$. This factor accordingly has been characterized as Paranoid Unconventionality.

For the student teachers this factor has a very high loading of $.729$ on variable 2 measuring trait B (Less Intelligent Vs. More Intelligent), followed by a high loading of $.547$ on variable 4 measuring trait E (Submissive Vs. Dominance). On variable 12 measuring trait O (Placid Vs. Insecure) there is a loading of $.382$. On variable 2 measuring trait B which stands for Intelligence there is the highest loading and it may be called Convergent Intellectuality.

This would mean that the inservice teachers are characterized by what Cattell (Handbook, p.96) calls protension signifying, "projection of inner tension", being jealous and dogmatic. Though sometimes enthused they are "easily seduced from practical judgement", liking to work in groups rather than a committee of two or three persons. They are mostly "joiners" and sound followers. As a results of these characteristics they are relaxed and composed and without tensions.

The results for the student group indicate that they are of a high mental ability and intellectual adaptability. They are assertive and competitive. Not unoften they feel worried, lonely and brooding. Perhaps, that is not an unfamiliar picture of people in their twenties who are uncertain of their job availability.

Factor C

Table 57.3

Factor C

Warmhearted-Enthusiasm Vs. Self-Sufficient Adventurism

Vari- ables	Description	Teachers	Students
1	Reserved Vs. Outgoing (A)	.781	-
4	Submissive Vs. Dominant (E)	.300	-
5	Sober Vs. Happy-Go-Lucky (F)	.545	-
7	Shy Vs. Venturesome (H)	-	.688
14	Group Dependent Vs. Self-Sufficient (Q ₂)	-	.734
16	Relaxed Vs. Tense (Q ₄)	.520	-
20	Intellectuality	-	.398

Factor C for the inservice teachers has a very high loading of .781 on variable 1 measuring trait A (Reserved Vs. Outgoing), followed by moderate loadings of .545 and .520 on variables 5 and 16 measuring traits F (Sober Vs. Happy-Go-Lucky) and Q₄ (Relaxed Vs. Tense), respectively. On variable 4 measuring trait E (Submissive Vs. Dominant) there is only a low loading of .300. Evidently, this factor for teachers may be characterized as Warmhearted Enthusiasm.

This factor for the students teachers has a very high loading of .734 and a high loading of .688 on variables 14 and 7, measuring traits Q₂ (Group Dependent Vs. Self-Sufficient) and H (Shy Vs. Venturesome), respectively, followed by a loading of

.398 on variable 20 measuring Intellectual Creativity. This factor has been termed as Self-Sufficient Adventurism.

As in the previous factor B so also in the factor C the two groups of inservice teachers and student teachers present a dissimilar personality structure. The teacher group is warm-hearted, easy going, enjoy social recognition and are natural joiners. They are happy-go-lucky, frank with "an easier, less punishing, more optimistic - creating environment... (with) less exacting aspirations" (Cattell, Handbook, p.87). Again, there is an absence of high ergic tension in them and are free from id pressures or tenseness : they are, in short relaxed, unfrustrated and composed. They can be occasionally assertive and headstrong but one has not to loose the sight of the fact that this trait has a low loading and nothing can be said with definiteness.

For the student teachers the picture that would argue is that they are self-sufficient, resourceful and prefer their decisions. They are not committee men and not natural joiners. Their remarks are more frequently independent solutions and are likely to be rejected by the group. It may be mentioned that "Q₂ is a central primary in the invia (introversion) second order factor" (Cattell, Handbook, p.105) measurable by the 16 PF test. They are also adventurous and not tormented by an "unreasonable sense of inferiority." They, as young men, show little inhibition by environmental threats. They have resilience of their own which may, perhaps, help them to absorb shocks in the teaching processes in their classrooms. The student teachers

have intellectual curiosity and enjoy challenging tasks with imagination. But this last characteristic has to be considered with a moderate loading only.

The personality configuration of inservice teachers may be, perhaps due to what Jackson and Guba (1957) called a personality change brought about by institutional pressures of the teaching role to which the student teachers have not as yet been exposed fully. Perhaps, they may also change to the teacher stereotype during their "second training" in their schools when they are established as fullfledged teachers.

Factor D

Table 57.4

Factor D

Socially Precise Individuality Vs. Socially Precise Naivete

Vari- ables	Description	Teachers	Students
2	Less Intelligent Vs. More Intelligent (B)	.382	-
11	Forthright Vs. Shrewd (N)	-	-.652
15	Uncontrolled Vs. Controlled (Q_3)	.790	.705
21	Individuality	.557	.300
22	Artistry	-.303	-

This factor for the inservice teachers has a very high loading of .790 on variable 15 measuring trait Q_3 (Uncontrolled Vs. Controlled), followed by a high loading of .557 on variable

21 measuring Individuality. On variables 2 and 22, measuring trait B (Less Intelligent Vs. More Intelligent) and Artistry, there are low loadings of .382 and $-.303$. Variable 22 for this group is going in the negative direction. Since this factor has high loadings on variables 15 and 21 it may be designated as Socially Precise Individuality.

For the student teachers this factor also has a very high loading of .705 on variable 15 measuring trait 3 (Uncontrolled Vs. Controlled), followed by an almost equally high loading of $-.652$ on trait 11 measuring trait N (Forthright Vs. Shrewd). Again, this factor has a low loading of .300 on variable 21 measuring Individuality. Therefore, this factor can be termed as Socially Precise Naivete.

Paraphrased, the inservice teachers group is more socially precise and controlled. They show socially approved character responses, considerations of others, regard for etiquette and social reputation. If an occasion arises they are prepared to work alone and for long hours without getting tired. They are somewhat insightful but lack the capacity for creative artistry in that they can not produce models, compose music or write stories, poems and other literary pieces, as is indicated by the negative direction of the loading on variable 22. But since the size of the loadings on variables 2 and 22 for this group, and under the conditions of this study, are low nothing can be said with certainty.

The student group though socially precise, controlled and compulsive show a sort of naivete in that they like simple

tasks, are content with what comes and have a blind trust in human nature. They do not seem yet to have developed adequately, perhaps, the capacity to analyze the motives of others. They also, like the inservice teachers, are prepared to work alone, should a need arise, for long hours without getting tired. But in view of the low loading on variable 21 nothing can be said with definiteness.

The teachers seem to have developed a personality structure well liked by the authorities and the bosses. The student teachers, though recognizing the need for social precision have not as young men, perhaps, developed the expertise to meet the social situations adequately well. But it is encouraging to note that with low N they would be "more trusted and liked - perhaps, especially by children" (Cattell, Handbook, p.100). Hadley (1953) too found high N negatively correlated with teaching success.

Factor E

Table 57.5
Factor E
Initiative Vs. Surgency

Variables	Description	Teachers	Students
1	Reserved Vs. Outgoing (A)	-	.523
5	Sober Vs. Happy-Go-Lucky (F)	-	.627
8	Toughminded Vs. Tenderminded (I)	.519	-
12	Placid Vs. Insecure (O)	.	.439
18	Initiative	.728	.480
20	Intellectuality	-.617	-

Factor E for the inservice teachers has a very high loading of .728 on variable 18 measuring Initiative, followed by a high negative loading of $-.617$ on Intellectuality. On variable 8 measuring trait I (Toughminded Vs. Tenderminded) there is a loading of .519. Evidently for the teachers this factor may be termed as Initiative.

For the student teachers this factor has a high loading of .627 on variable 5 measuring trait F (Sober Vs. Happy-Go-Lucky), followed by a moderate loading of .523 on variable 1 measuring trait A (Reserved Vs. Outgoing). On variable 18 measuring Initiative and variable 12 measuring trait O (Placid Vs. Insecure), there are only moderate loadings of .480 and .439, respectively. This appears to be a factor of Surgency.

The picture that would argue for the inservice teachers is that they are people who produce new formulas or products and bring about changes in procedures and organizations. But the high negative loading on variable 20 (Intellectuality) is indicative of the fact that they lack intellectual curiosity, do not have any preference for adventure over routine and do not like reconstructing things and ideas to form something different but prefer routinized approaches to teaching learning processes in the classrooms and, perhaps, outside also. They also expect affection and are rather anxious about themselves. But a moments reflection would make it clear that if initiative, as defined here, is not supplemented and aided by intellectual curiosity, where there is hardly any respect for rules and

regulations and routine bound life, it (initiative) would end in aridity and nothingness.

The picture for the student teachers is dissimilar. They are enthusiastic, heedless, happy-go-lucky without any exacting aspirations. Perhaps, they have "generally had an easier, less punishing, more optimism - creating environment" (Cattell, Handbook, p.87). Besides, they are good natured, easy going, soft hearted, trusting youngman. But inspite of their surgency, good nature and initiative oriented personality configuration, they are occasionally worried, anxious and depressed easily. Not unoften they feel lonely and brooding.

Factor F

Table 57.6

Factor F

Positive Teaching Attitude Vs. Artistic Creativity

Vari- ables	Description	Teachers	Students
2	Less Intelligent Vs. More Intelligent (B)	.309	-
6	Expedient Vs. Conscientious (G)	.469	-
8	Toughminded Vs. Tenderminded (I)	-.347	-
17	Environmental Sensitivity	-	.511
22	Artistry	-.594	.782
23	Creativity	-	.698
24	MTAI	.757	-

This factor for the inservice teachers has a very high loading of .757 on variable 24 measuring attitude towards teaching (MTAI). The next moderate loading of .469 is on variable 6 measuring trait G (Expedient Vs. Conscientious), followed by a low positive loading of .309 on variable 2 measuring trait B (Less Intelligent Vs. More Intelligent). This factor has a negative loading of -.594 on variable 22 measuring Artistry, followed by a low negative loading -.347 on variable 8 measuring trait I (Toughminded Vs. Tenderminded). Obviously, this factor is a Positive Teaching Attitude.

For the student teacher group in this factor there is the highest loading of .782 on variable 22 measuring Creative Artistry, followed by a high loading of .698 on variable 23 measuring Creativity and a moderate loading of .511 on variable 17 measuring Environmental Sensitivity. Evidently this factor can be characterized by Artistic Creativity.

It is of interest to note that while this factor signifies a positive teaching attitude for the inservice teachers for the student teachers the cluster of variables is a significant factor of artistic creativity. For the teachers it would mean a progressive attitude towards teaching, one of respect and cooperation with pupils avoiding sarcasm, ridicule and punishment. Teaching and learning process would be cooperative rather than dominated by the teachers. There would be more student talk than teacher talk. Such teaching, understandably, would be conscientious, responsible and emotionally disciplined. The teachers lack interest in making products, models, writing

stories, plays and other literary pieces. This stance is understandable in view of the state of art in the contemporary teaching profession where the emphasis is on course coverage and good pass percentage. The teachers are moderately unsentimental but intelligent as is evidenced by the moderate loading on variables 2 and 8.

The student teachers as delineated by this factor are interested in the production of objects, paintings, carving and writing of stories, play and other literary compositions. They are environmentally sensitive in that they are open to the ideas of others, interested in the beautiful and humorous aspects of experiences. Such a phenomenon is completely absent in the teacher group in this factor.

Factor G

Table 57.7

Factor G

Stable Dominance Vs. Stable Conscientiousness

Variables	Description	Teachers	Students
1	Reserved Vs. Outgoing (A)	-	.326
3	Less Stable Vs. More Stable (C)	.774	.774
4	Submissive Vs. Dominant (E)	.646	-
5	Sober Vs. Happy-Go-Lucky (F)	.370	-
6	Expedient Vs. Conscientious (G)	-	.673
12	Placid Vs. Insecure (O)	-	-.398

This factor for inservice teachers has a very high loading of .774 on variable 3 measuring trait C (Less Stable Vs. More Stable), followed by a high loading of .646 on variable 4 measuring the trait E (Submissive Vs. Dominant). On variable 5 measuring trait F (Sober Vs. Happy-Go-Lucky) there is a low loading of .370. Since variables 3 and 4 have high loadings this factor may be characterized as Stable Dominance.

For this student teachers on variable 3, measuring trait C (Less Stable Vs. More Stable), there is an equally high loading of .774 as that of the inservice teachers. But it has also a high loading of .673 on variable 6 measuring trait G (Expedient Vs. Conscientious). It is followed by a negative loading of -.398 on variable 12 measuring trait O (Placid Vs. Insecure). On variable 1 measuring trait A (Reserved Vs. Outgoing) there is a low loading of .326. Evidently this factor may be termed as Stable Conscientiousness for the student teachers.

The inservice teachers are stable, emotionally mature people, showing restraint in avoiding difficulties and not annoyed by things and people. They are people not dissatisfied with world situations, etc. But at the same time they are assertive, perhaps, in their classrooms if not outside, and demand admiration and attention for the work done. They have a more happy-go-lucky attitude but have less exacting aspirations. But in view of the modest loading nothing can be said with exactitude.

The student teachers are also emotionally mature people showing restraint in avoiding difficulties and are satisfied with world situations but like the teachers they are not assertive but perserving, responsible and determined, dominated by a sense of duty. Perhaps, this is what they have been theoretically oriented towards in their colleges of education and the theory papers in Education. The student teachers, again, are placid, self assured and without fears. They are outgoing and warmhearted, trustful and ready to cooperate. Since the last two variables have modest loading nothing can be said with certainty.

Factor H

Table 57.8
Factor H
Venturesomeness Vs. Imaginativeness

Variables	Description	Teachers	Students
7	Shy Vs. Venturesome (H)	.847	-
8	Toughminded Vs. Tenderminded (I)	-	-.403
10	Practical Vs. Imaginative (M)	-	.657
16	Relaxed Vs. Tense (Q ₄)	-.405	-
18	Initiative	-	-.434
20	Intellectuality	-	-.409
21	Individuality	.318	.429

This factor for the inservice teachers has a very high loading of .847 on variable 7 measuring the trait H (Shy Vs. Venturesome), followed by a moderate negative loading of -.405 on variable 16 measuring trait Q₄ (Relaxed Vs. Tense). There is a low loading of .318 on variable 21 i.e. (Individuality). It is obviously a factor of Venturesomeness.

For the student teachers this factor has a high loading of .657 on variable 10 measuring trait M (Practical Vs. Imaginative) followed by a moderate loading of .429 on variable 21 measuring Individuality. On variables 8, 18 and 20, measuring trait I (Toughminded Vs. Tenderminded), Intellectuality, and Initiative, there are moderate negative loadings of -.403, -.434 and -.409 respectively. Evidently since variable 10 measuring trait M has the highest loadings, this factor can be described as Imaginativeness.

The picture that emerges for the inservice teachers is that they are adventurous, like to meet people, like parents and superiors, perhaps, and are not shy or tormented by an unreasonable sense of inferiority. They seem to be characterized by persistence showing "little inhibition by environmental threat." There is some evidence, (Cattell, Handbook, p.92) that "this trait will increase with age." And, it is encouraging because this trait will enable them, as shown by Start (1966), to confront a class of 60-70 students with an amount of resilience providing them with the capacity to absorb shocks in the act of teaching process every hour and every day. They have low ergic tension and are relaxed and composed which would carry them far

as effective teachers. There is some evidence that judged on the basis of second stratum factors measurable by 16 PF test, they would be properly adjusted people and not suffer from any anxiety. From the mental hygiene point of view this is a significant advantage. As judged by the variable of individuality they would like to work alone without getting tired. But since the loading is very low much can not be said about this characteristic with confidence.

The student teachers are imaginative, more absorbed in ideas having, an intense subjectivity and inner life. They are disregarding of practical matters. In the group they tend to feel unaccepted, but unconcerned. They are in the habit of making original suggestions, which being (partly impractical) are likely to be rejected in the long run. They do not also feel group bound. Cattell and Drevdahl (1955) and Drevdahl (1956) have found high M creative researchers and artists significantly distinguished from administrators and teachers of the same eminence. In view of the high loading on this variable it can be said with some amount of confidence that these youngmen have their own characteristics which the inservice period will, perhaps, mutilate if not destroy completely. These characteristics gain additional support from the Individuality variable which signifies that this group of prospective teachers is prepared to work alone, think for themselves and work for long periods without getting fatigued. Their involvement in the work would be their leisure to refresh them. But the moderate negative loadings on the variables of Intellectuality

and Initiative indicate that they have rather poor intellectual curiosity, preference for adventure over routine and the capacity to produce new formulas or products etc. etc. The moderate negative loading on Cattell's trait I indicates that they are self-reliant and do not dwell on physical disabilities.

Factor I

Table 57.9

Factor I

Shrewd Experimentation Vs. Free Thinking Experimentation

Vari- ables	Description	Teachers	Students
6	Expedient Vs. Conscientious (G)	-	-.473
8	Toughminded Vs. Tenderminded (I)	-	.378
11	Forthright Vs. Shrewd (N)	.698	-
13	Conservative Vs. Experimenting(Q ₁)	.674	.713
14	Group Dependent Vs. Self-Sufficient (Q ₂)	.390	-
21	Individuality	-	.315

Factor I for inservice teachers has a high loading of .698 on variable 11 measuring trait N (Forthright Vs. Shrewd), followed again by a high loading of .674 on variable 13 measuring trait Q₁ (Conservative Vs. Experimental) and a loading of .390 on variable 14 measuring trait Q₂ (Group Dependent Vs. Self-Sufficient). Evidently this factor can be termed as Shrewd Experimentation.

Factor I for the student teachers has a very high loading of .713 on variable 13, followed by a moderate loadings of -.473 on variable 6 measuring G (Expedient Vs. Conscientious). On variables 8 and 21 measuring trait I (Toughminded Vs. Tenderminded) and Individuality, the loadings are .378 and .315, respectively. In view of the high loadings on variable 13 this factor may be called as Free-thinking Experimentation.

It would mean that the inservice teachers are shrewd, sophisticated, ambitious with exact calculating minds, ambitious but possibly insecure and have an experimental attitude, "more inclined to experiment with problem solutions" (Cattell, Handbook, p.104). Again, they are self-sufficient, resourceful and prefer their own decisions. But since the variable 12 has a slightly moderate loading much cannot be said about it with confidence.

The student teachers on the other hand do not show any characteristics of shrewdness in this factor but share qualities of free thinking experimentation with the inservice teacher group. They, evidently as young men are more analytical in thought, and interested, "in breaking the crust of custom and tradition and in leading and persuading people" (Cattell, Handbook, p.104). In group dynamics they contribute more remarks and discussion, etc. etc. Though the teachers too have all these personality characteristics their whole approach is tempered by sophistication and shrewd calculating minds. Perhaps, this is what maturing in the profession has taught them.

The negative loading for the student teachers on variable 6 suggests that they have a low ego-strength and are

not prepared to accept the group moral standards. They disregard obligations to people. As youngman who have left adolescence only lately they expect affection only because at times they feel insecure. The student teachers lastly are prepared to work all alone rather than in groups and can think for themselves. But the low loading on this variable does not provide an assurance of this phenomenon.

Factor J

Table 57.10
Factor J
Creative Self-Strength Vs. Suspiciousness

Vari- ables	Description	Teachers	Students
5	Sober Vs. Happy-Go-Lucky (F)	.301	-
9	Trusting Vs. Suspicious (L)	-	.747
16	Relaxed Vs. Tense (Q ₄)	-	-.570
19	Self-Strength	.878	-
23	Creativity	.307	-

This factor for the inservice teachers has a very high loading of .878 on variable 19 measuring Self-strength, followed by a low loading of .307 on creativity and a low loading of .301 on variable 5 measuring trait F (Sober Vs. Happy-Go-Lucky). Understandably this factor can be termed as Creative Self-Strength.

For the student teachers this factor has a very high loading of .747 on variable 9 measuring trait L (Trusting Vs.

Suspicious) followed by a negative loading of $-.570$ on trait 16 (Relaxed Vs. Tense). This factor may be, therefore, called as Suspiciousness.

The picture that would argue for the inservice teachers is that they possess self-confidence in matching talents against others, are versatile and willing to take risks and have a desire to excel in organisational ability. They have an overall creative potential also. They are happy-go-lucky, frank and enthusiastic. But since there are low loadings on variables 5 and 20 nothing can be said with certainty.

The student teachers are characterized by what Cattell (Handbook, p.96) terms protension signifying "projection of inner tension," being jealous and dogmatic. They feel insecure socially. "There is, some suggestion", writes Cattell (Handbook, p.97) "that protension is a preferred method of handling anxiety among intelligent and educated people."

Evidence is available from the Table under reference that variable 16 has a negative loading and that too not insignificantly or moderately. This would suggest that the student teachers are having low ergic tension and are relaxed and composed. But in view of their protension how they could possibly be relaxed and composed is difficult to speculate. A possible but speculative explanation could be that they are relaxed and composed essentially but the training college programmes, where they are treated as people of no significance and subjected to the various demands of irrational training programmes, make them protensious and anxiety ridden.

Factor K

Table 57.11
Factor K
Insecurity

Vari- ables	Description	Teachers	Students
6	Expedient Vs. Conscientious (G)	-.321	-
12	Placid Vs. Insecure (O)	.827	-

This factor for inservice teachers has a very high loading of .827 on variable 12 measuring trait O (Placid Vs. Insecure), followed by a low negative loading of -.321 on variable 6 (Experimenting Vs. Conscientious). This factor has emerged in the inservice teachers group only and has been termed as a factor of Insecurity.

The suggestive picture for the inservice teachers is that they feel insecurity leading them to feel lonely and brooding. They feel, as observed by Cattell (Handbook, p.102), "over fatigued from exciting situations... and feel inadequate to meet the rough demands of life." They are, therefore, inclined to feel rather maladjusted. This makes them fickle, slack or in a word expedient. But since the loading is low nothing can be said with an amount of certainty.

SECTION B

FACTOR CLUSTER OF VARIABLES IN INSERVICE SCIENCE,
ARTS AND COMMERCE TEACHERS

Identification of Factors

The factors which have been identified on the basis of factor analysis for inservice Science, Arts and Commerce teachers are listed below :

<u>Factor</u>	<u>Science Teachers</u>	<u>Arts Teachers</u>	<u>Commerce Teachers</u>
A	Intellectual Creativity	Vs. Emotionally Instable Creativity	Vs. Creative Intellectuality
B	Envirionmental Sensitivity	Vs. Protension Teaching Attitude	Vs. Creative Individuality
C	Conscientious Teaching Attitude	Vs. Sophisticated Submissive-ness	Vs. Relaxed Conventionality
D	Apprehensive-ness	Vs. Initiative-lessness	Vs. Apprehensiveness
E	Venturesomeness	Vs. Creative Intellectuality	Vs. Convergent Intellectuality
F	Self-Discipline	Vs. Apprehensive-ness	Vs. Stability
G	Suspiciousness	Vs. Artistic Insensitivity	Vs. Sensitivity
H	Self-Sufficiency	Vs. Aesthetic Sensitivity	Vs. Environmental Insensitivity
I	Surgency	Vs. Venturesome-ness	Vs. Favourable Teaching Attitude
J	Experimentation	Vs. Tension	--
K	Unconvention-ality	--	--

Factor A

Table 58.1

Factor A

Intellectual Creativity Vs. Emotionally Instable
Creativity Vs. Creative Intellectuality

Variable	Description	Science Teachers	Arts Teachers	Commerce Teachers
2	Less Intelligent Vs. More Intelligent (B)	-	-.358	-
3	Less Stable Vs. More Stable (C)	-	-.741	-
6	Expedient Vs. Conscientious (G)	-	-	-.470
7	Shy Vs. Adventurous	-	-	-.405
14	Group Dependent Vs. Self-Sufficient (Q ₂)	-	-.370	-
17	Environmental Sensitivity	-	-.359	.365
19	Self-Strength	.678	.552	-
20	Intellectuality	.826	-	.839
21	Individuality	-	-	.336
23	Creativity	.798	.736	.859

Factor A for Science inservice teachers has a very high loading of .826 on variable 20 measuring Intellectuality, followed by two more high loadings of .798 and .678 on variables 23 and 19 measuring Creativity and Self-strength, respectively. Evidently all the three variables with these high loadings pertain to SAM, a measure of creative potential. It is, therefore, obviously a

factor of Intellectual Creativity.

For the Arts inservice teachers factor A has a very high negative loading of $-.741$ on variable 3 measuring trait C (Less Stable Vs. More Stable), followed by an equally very high, though positive loading of $.736$ on variable 23 measuring Creativity. On variable 19 measuring Self-strength there is a high loading of $.552$, followed by variable 17 with a loading of $.359$ measuring Environmental Sensitivity. On variables 2 and 14 measuring trait B (Less Intelligent Vs. More Intelligent) and trait Q_2 (Group Dependent Vs. Self-Sufficient), there are low loadings to the tune of $-.358$ and $-.370$, respectively. This factor may, therefore, be termed as Emotionally Instable Creativity.

For the Commerce inservice teachers factor A has a very high loading of $.859$ on variable 23 measuring Creativity (Composite), followed by one more very high loading of $.839$ on variable 20 measuring Intellectuality and another a rather low loading of $.336$ on variable 21 measuring Individuality. On variable 17 measuring Environmental Sensitivity there is a modest loading of $.365$. On variables 6 and 7 measuring traits G (Expedient Vs. Conscientious) and H (Shy Vs. Adventurous) there are moderate negative loadings of $-.470$ and $-.405$, respectively. This factor, evidently, is a factor of Creative Intellectuality.

It would mean that the Science teachers are intellectually curious, enjoying challenging tasks, have enough imagination, want to reconstruct things according to their own ideas, and do not want to follow a routine or a prescribed path.

They have, besides, high scores in creativity and possess self-confidence, are resourceful, versatile, are willing to take risks and have the capacity for organisational ability, in a word Self-Strength.

The Arts teachers, on the other hand are emotionally instable as indicated by a very high negative loading on trait C. They get emotional when frustrated, are perhaps easily perturbed when things do not work according to their expectations and worry occasionally. But they are creative also in that they have the second highest loading in variable 23. The creative workers seem to regress though temporarily when they face insoluble problems. Infact, Cattell (1955) found "at or beyond the 1 per cent level of certainty he (researcher)... shows more emotional instability (C-)...." The Arts teacher group also possess self-confidence, are resourceful and willing to take risks, etc. etc. Besides, they are open to the ideas of the others, are interested in the beautiful and have sensitivity to meaningful relations. And this is expected of Arts teachers who have studied literature that has an abiding appeal to human nature and sensitivity. But they are group dependent and slightly low in convergent thinking abilities. Since the loadings are very modest nothing can be said with definiteness.

For the Commerce teachers the picture would be that they have self-confidence, are resourceful, versatile and willing to take risks, have an amount of initiative, are self-starters and can, to some extent, write stories, plays and other literary pieces. They have pronounced intellectual curiosity, like to

reconstruct things and ideas to form something different and dislike doing things in a prescribed and routine way. They have environmental sensitivity and individuality. But in view of the modest loadings in variables 17 and 20 nothing can be said with definiteness with regard to environmental sensitivity and individuality. The moderate negative loadings in variables 6 and 7 would point to the fact that they are expedient, disregarding rules and obligations to people. Besides, they are shy, withdrawn, emotionally cautious with restricted results.

Factor B

Table 58.2

Factor B

Environmental Sensitivity Vs. Protension Teaching
Attitude Vs. Creative Individuality

Variable	Description	Science Teachers	Arts Teachers	Commerce Teachers
2	Less Intelligent Vs. More Intelligent (B)	-	.390	-
4	Submissive Vs. Dominant (E)	-	-	-.529
8	Toughminded Vs. Tenderminded (I)	.446	-	-
9	Trusting Vs. Suspicious (L)	-	.824	-
11	Forthright Vs. Shrewd (N)	-	-	-.642
13	Conservative Vs. Experimenting (Q ₁)	-	-.333	-
15	Uncontrolled Vs. Controlled (Q ₃)	-	-	.685
17	Environmental Sensitivity	.887	.422	-
18	Initiative	.476	-	-
20	Intellectuality	-.368	-	-
21	Individuality	-	-	.769
22	Artistry	.330	-.324	-.365
23	Creativity	.435	-	-
24	MTAI	-	.644	-

Factor B for inservice Science teachers has a very high loading of .887 on variable 17 measuring Environmental Sensitivity, followed by a moderate loading of .476 in variable 18 Initiative. On variable 8 measuring trait I (Toughminded Vs. Tenderminded) there is a moderate loading of .446. On variables 23, 22 and 20 measuring Creativity, Artistry and Intellectuality, there are moderate and low loadings of .435, .330 and -.368. This factor may be called Environmental Sensitivity.

For the inservice Arts teachers this factor has a very high loading of .824 on variable 9 measuring trait L (Trusting Vs. Suspicious), followed by a high loading of .644 on variable 24 measuring attitude towards teaching (MTAI). On variable 17 measuring Environmental Sensitivity the loading is rather moderate .422. On variable 2 measuring trait B (Less Intelligent Vs. More Intelligent) the loading is low .390, followed again by two negative loadings of -.333 and -.324 on variables 13 and 22, measuring trait Q₁ (Conservative Vs. Experimental) and Artistry. This factor may be designated as Protension Teaching Attitude.

This factor for the inservice Commerce teachers has a very high loading of .769 on variable 21 measuring Individuality, followed by a high loading of .685 on variable 15 measuring trait Q₃ (Uncontrolled Vs. Controlled). On variable 4 measuring trait E (Submissive Vs. Dominant) there is a loading of -.529, followed by a high negative loading of -.642 on variable 11 measuring trait N (Forthright Vs. Shrewd). On variable 22 measuring Artistry there is also a low though negative loading of -.365. This factor has been called Creative Individuality.

The Science teachers are open to the ideas of others, relate ideas to what can be seen, touched or heard and are interested in the beautiful aspects of experience. It is interesting to note that as Science teachers they are having a measure of initiative in producing new formulas and products. They are also tenderminded people who seek attention and expect affection, being not unoften anxious about themselves. But they do not lack creativity. They have an amount of potential, howsoever, insignificant it may be, in producing plays, dramas and other compositions. But surprisingly they lack intellectual curiosity. But as there are low loadings on variables 21 and 22 nothing can be said with certainty about the last two variables of Artistry and Intellectuality.

The Arts teachers, on the other hand, have protension in that they are suspecting and jealous. The term protension, according to Cattell (Handbook, p.96) signifies "projection of inner tension." This trait L+, in the 16 PF test, is associated with QII (measuring second-stratum factors measurable by 16PF test) Anxiety. Now, it stands to reason as to how such teachers with anxiety, suspicion and irritability could demonstrate a very favourable attitude towards teaching as indicated by a high loading of .664 on variable 24 (MTAI). It is difficult to speculate and a ready reasonable explanation is hard to come by. Could it be, perhaps, due to the fakability of the MTAI. It needs further investigation to explain the apparent contradiction.

The Arts teachers are modestly environmentally sensitive by being open to the ideas of others and sensitivity to meaningful relations. The negative very low loadings on variable 22 (Artistry), variable 13 measuring trait Q₁ (Conservatism) and variable 2 (Less intelligence) can not be trusted too strongly in explaining the phenomenon rather conclusively.

The picture for the Commerce teachers is one of marked individuality. They would prefer to work for long hours without getting tired, they would also prefer to work alone rather than in groups, see themselves as self starters, think for themselves but are critical of others. They are not socially precise, are careless of social rules, and follow their own urges being somewhat lax. They are submissive in that they are conventional and conforming. It is rather surprising that as people of marked individuality they are submissive and conforming. Perhaps, it is from pragmatic considerations that they have to be submissive or conforming for their survival. They are also forthright, spontaneous and natural. They, however, lack the capacity to write stories, poems and plays, etc. etc.

Contd.

Factor C

Table 58.3

Factor C

Conscientious Teaching Attitude Vs. Sophisticated
Submissiveness Vs. Relaxed Conventionality

Variables	Description	Science Teachers	Arts Teachers	Commerce Teachers
1	Reserved Vs. Outgoing (A)	-	-	.321
4	Submissive Vs. Dominant (E)	-	-.774	-.523
6	Expedient Vs. Conscientious (G)	.789	-	.341
10	Practical Vs. Imaginative (M)	-	-	-.666
11	Forthright Vs. Shrewd (N)	-	.845	-
13	Conservative Vs. Experimenting (Q ₁)	-	-	.408
14	Group Dependent Vs. Self-Sufficient (Q ₂)	-	-	.314
15	Uncontrolled Vs. Controlled (Q ₃)	-	.401	-
16	Relaxed Vs. Tense (Q ₄)	-	-	.761
17	Environmental Sensitivity	-	.331	-
19	Self-Strength	-	-	.320
21	Individuality	-.435	-	-
22	Artistry	-.530	-	-
24	MTAI	.717	-	-

This factor for inservice Science teachers has a very high loading of .789 on variable 6 measuring trait G (Expedient Vs. Conscientious), followed by an equally high loading of .717

on variable 24 measuring attitude towards teaching as measured by MTAI. On variable 21 and 22 measuring Individuality and Artistry, there are negative moderate loadings to the tune of -.435 and -.530, respectively. This factor, therefore, may be called Conscientious Teaching Attitude.

Factor C for the inservice Arts teachers has a very high loading of .845 on variable 11 measuring trait N (Forthright Vs. Shrewd), followed by an equally very high loading of -.774 on variable 4 measuring trait E (Submissive Vs. Dominant). While on variable 15 measuring trait Q₃ (Uncontrolled Vs. Controlled), there is a loading of .401, on variable 17 measuring Environmental Sensitivity there is a low loading of .331 only. Keeping in view the positive and negative loadings on variable 11 and 4 this factor can evidently be called Sophisticated Submissiveness.

This factor for the Commerce inservice teachers has a very high loading of .761 on variable 16 measuring trait Q₄ (Relaxed Vs. Tense), followed by a moderate loading of .408 and .341 on variables 13 and 6 measuring (Conservative Vs. Experimenting) and (Expedient Vs. Conscientious), respectively. On variables 1 and 19 measuring trait A (Reserved Vs. Outgoing) and Self-strength there are low loadings of .321 and .320, respectively. On variable 14 measuring trait Q₂ (Group Dependent Vs. Self Sufficient) there is a low loading of .314. On variables 4 and 10 measuring trait E (Submissive Vs. Dominant) and M (Practical Vs. Imaginative) there are moderate and high negative loadings of -.523 and -.666, respectively. In selecting a proper name for this factor for the inservice

Commerce teachers cognizance shall have to be taken of the two variables 16 and 10 though one has a positive and other a negative loading. This factor, in view of these considerations, has been termed as Relaxed Conventionality.

The picture that would argue for the Science teachers is that they are conscientious, determined and responsible. They are dominated by a sense of duty to the profession and are equally concerned about moral standards and rules. Evidently with these positive qualities the higher loading in variable 24 (MTAI) is as it should be. They would enjoy teaching; the teachers and pupils would work together in the teaching-learning process. Common goals and common understandings would characterize the teacher-pupil relationship. Punishment and ridicule would be absent. It is, perhaps, no surprise that these Science inservice teachers are not interested in writing essays, poems and other literary pieces. Perhaps, their education in Science has not taught them this art. They are not prepared to work alone for long hours without getting tired.

On the other hand the Arts inservice teachers are sophisticated, polished socially, and worldly astute. Though ambitious they are possibly insecure. This makes them submissive, humble and diplomatic. They know following convention and obeying rules and regulation would help them materially under the present social organization. Assertion is not in their nature. Perhaps, this is a characteristic of Arts teacher stereotype. These characteristics support Q_3 loading which is defined by social precision. They are, besides, open to the

ideas of others and are sensitive to meaningful relations in their environment.

The picture for the Commerce teachers would be that they have no id pressures and are relaxed, tranquil, unfrustrated and composed. Anxiety does not trouble them. Such people are, by and large, conventional, conservative, respecting customs, established ideas and tolerant of traditional difficulties. They are submissive, humble and conforming and tolerably (because of low loading), perhaps, expedient. Socially they are group dependent, "joiners" and sound followers. They possess an outgoing, warmhearted nature and possess self-strength and confidence.

Factor D

Table 58.4

Factor D

Apprehensiveness Vs. Initiativelessness Vs. Apprehensiveness

Variables	Description	Science Teachers	Arts Teachers	Commerce Teachers
1	Reserved Vs. Outgoing (A)	-	.612	-
2	Less Intelligent Vs. More Intelligent (B)	.439	-	-
5	Sober Vs. Happy-Go-Lucky (F)	-	.619	.327
6	Expedient Vs. Conscientious (G)	-	.328	-
7	Shy Vs. Adventurous (H)	-	-	.580
12	Placid Vs. Insecure (O)	.854	-	.764
18	Initiative	.646	-.780	-
22	Artistry	-	-	-.315

Factor D for the inservice Science teachers has a very high loading of .854 on variable 12 measuring trait O (Placid Vs. Insecure) followed by a high loading of .646 on variable 18, measuring Initiative. On variable 2 measuring trait B (Less Intelligent Vs. More Intelligent) there is a moderate loading of .439. Evidently this factor may be termed as Apprehensiveness.

For the Arts inservice teachers this factor has a very high negative loading of -.780 on variable 18 measuring Initiative. On variables 5 and 1 measuring traits of F (Sober Vs. Happy-Go-Lucky) and A (Reserved Vs. Outgoing) there are high loadings of .619 and .612. On variable 6 measuring trait G (Expedient Vs. Conscientious), there is a low loading of .328. This factor may be termed as Initiativelessness.

Factor D for the inservice Commerce teachers has a very high loading of .764 on variable 12 measuring trait O (Placid Vs. Insecure), followed by a high loading of .580 on variable 7 measuring trait H (Shy Vs. Adventurous). On variable 5 measuring trait F (Sober Vs. Happy-Go-Lucky) there is a modest loading of .327, followed by a negative loading of -.315 on variable 22 measuring Artistry. This factor may be characterised as Apprehensiveness.

The Science teachers are apprehensive, feeling insecurity and, therefore, characterized by anxiety. They feel depressed leading them to feel lonely. They not unoften feel overfatigued from exciting situations. But inspite of this they are prepared to take initiative indirrecting dramatics and musical compositions and are anxious to bring about organizational changes.

Science, by and large, attracts people of higher intelligence and this is testified by the case of these teachers also.

The picture for the Arts teachers is that they predominantly lack in initiative in directing, producing dramatics and musical productions or producing formulas or products and also bringing about changes in organizational procedures. There are without "exacting aspirations" and happy-go-lucky, always cheerful. If they are outgoing, warmhearted and easy going it is as it should be. Nothing can be said with definiteness regarding their conscientiousness as there is a low loading on this variable.

The Commerce teachers are apprehensive, feeling insecurity and, therefore, characterised by anxiety. But these teachers are not withdrawn but are socially bold. They do not have an undue sense of inferiority and little "inhibition to threat" (Cattell, Handbook, p.92). In a word they are adventurous. They are talkative and enthusiastic lacking in artistry. They cannot, perhaps, write essays, stories, poems and other literary compositions. But one cannot be certain about the last two characteristics measured by variables 5 and 22 in view of rather low loadings.

Contd.

Factor E

Table 58.5

Factor E

Venturesomeness Vs. Creative Intellectuality Vs. Convergent Intellectuality

Vari- ables	Description	Science Teachers	Arts Teachers	Commerce Teachers
1	Reserved Vs. Outgoing (A)	-.666	-	-
2	Less Intelligent Vs. More Intelligent (B)	-	.480	.714
7	Shy Vs. Adventurous (H)	.724	-	-
9	Trusting Vs. Suspicious (I)	-	-	.697
10	Practical Vs. Imaginative (M)	-	-	.402
13	Conservative Vs. Experi- menting (Q ₁)	-	-	.340
16	Relaxed Vs. Tense (Q ₄)	-.671	-	-
19	Self-Strength	-	-.407	-
20	Intellectuality	-	.877	-
24	MTAI	.312	-	-

For inservice teachers of Science this factor has a very high loading of .724 on variable 7 measuring trait H (Shy Vs. Adventurous), followed by two high negative loadings of -.671 and -.666 on variables 16 and 1 measuring Q₄ (Relaxed Vs. Tense) and A (Reserved Vs. Outgoing). On variable 24, measuring attitude towards teaching (MTAIO, there is rather a low loading of .312. This factor may be termed as Venturesomeness.

For inservice Arts teachers it is variable 20 (Intellectuality) that has yielded a very high loading of .877 on this factor, followed by an appreciable moderate loading of .480 on variable 2 measuring trait B (Less Intelligent Vs. More Intelligent). On variable 19 measuring Self-strength there is also a moderate though negative loading of -.407. Evidently this is a factor of Creative Intellectuality.

For the inservice Commerce teachers this factor has a very high loading of .714 on variable 2 measuring trait B (Less Intelligent Vs. More Intelligent), followed by a high loading of .697 on variables 9 measuring trait L (Trusting Vs. Suspicious). On variable 10 measuring trait M (Practical Vs. Imaginative) there is a moderate loading of .402, followed by variable 13 with a loading of .340 measuring trait Q₁ (Conservative Vs. Experimenting). This factor may be called Convergent Intellectuality.

The Science teachers are adventurous, friendly, and socially bold. They do not suffer from an unreasonable sense of inferiority. They are likely to show "little inhibition in environmental threat" (Cattell, Handbook, p.92). Understandably, they have a low ergic tension, are relaxed and composed. They are not assailed by anxiety as is the case with high Q₄ people. But they are reserved (A-) a trait common with researchers as investigated by Cattell (1955).

The low loading on variable 24 (MTAI) does not enable one to say anything with certainty.

The Arts teachers not surprisingly, perhaps, have demonstrated a high level of creative intellectuality. They have intellectual curiosity, enjoy challenging tasks, and have a preference for adventure over routine. They have a dislike for doing things in a prescribed way. They are moderately intelligent also but lack self-strength in that they have little confidence in matching talents against others, and are not resourceful and willing to take risks. They, perhaps, do not possess nor have a desire to excel organizational abilities adequately.

The Commerce teachers present a picture of convergent intelligence and significant intellectual adaptability. They show better judgement and are persevering. But they are also suspicious, demanding that other people should own responsibility over errors. Intellectual adaptability, so it seems, has not provided them with any capacity to withstand dogmatism and jealousy. As people who have studied Commerce they are practical, alert to immediate needs and guided by objective realities. Lastly they are experimenting and liberal but in view of the low loading on variable 13 it is difficult to say anything with an amount of definiteness.

Contd.

Factor F

Table 58.6

Factor F

Self Discipline Vs. Apprehensiveness Vs. Stability

Vari- ables	Description	Science Teachers	Arts Teachers	Commerce Teachers
2	Less Intelligent Vs. More Intelligent (B)	.449	-	-
3	Less Stable Vs. More Stable(C)	-	-	.750
5	Sober Vs. Happy-Go-Lucky (F)	-	-	.715
6	Expedient Vs. Conscientious (G)	-	-	-.413
8	Toughminded Vs. Tenderminded (I)	-.300	-	-
10	Practical Vs. Imaginative (M)	-	.469	-
12	Placid Vs. Insecure (O)	-	.831	-
13	Conservative Vs. Experi- menting (Q ₁)	-	-.560	-
15	Uncontrolled Vs. Controlled(Q ₃)	.889	-	-
18	Initiative	-	-	-.588
19	Self-Strength	.343	-	-

This factor for Science inservice teachers has a very high loading of .889 on variable 15 measuring trait Q₃ (Uncontrolled Vs. Controlled), followed by an appreciable moderate and low loadings of .449 and .343 on variables 2 and 19 measuring trait B (Less Intelligent Vs. More Intelligent) and Self-Strength, respectively. On variable 8 measuring trait I (Toughminded Vs. Tenderminded) there is a negative low

loading of $-.300$. This factor has been designated as Self-Discipline.

For the Arts teachers this factor has a very high loading of $.831$ on variable 12 measuring trait O (Placid Vs. Insecure), followed by a significant moderate loading of $.469$ on variable 10 measuring trait M (Practical Vs. Imaginative). On variable 13 measuring trait Q_1 (Conservative Vs. Experimenting) there is a rather high negative loading of $-.560$. Evidently this is a factor of Apprehensiveness.

For inservice Commerce teachers this factor has a very high loading of $.750$ on variable 3 measuring trait C (Less Stable Vs. More Stable), followed by an appreciably high loading of $.715$ on variable 5 measuring trait F (Sober Vs. Happy-Go-Lucky). On variables 6 and 18 measuring trait G (Expedient Vs. Conscientious) and Initiative there are negative moderate loadings of $-.413$ and $-.588$, respectively. This factor has been termed as Stability.

The Science teachers, as expected possess a high degree of self-sentiment and are self-controlled following their self-images. They are free of anxiety with a strong will power. Again, as expected, they are more intelligent (B+). They possess self-confidence, and are willing to take risks. That they are unsentimental, self-reliant and aesthetically insensitive cannot be commented upon with an amount of confidence because of the low loadings.

The Arts inservice teachers are apprehensive, insecure and anxious. "Clinically" writes Cattell (Handbook, p. 102) "O is a very important, first as one of the largest factors in anxiety." They feel lonely and brood not infrequently. For such persons, it is perhaps, a normal expectation, to be conservative, respecting established ideas and tolerant of traditions and customs. They are not interested in Science, as suggested by Cattell (Handbook, p. 104). But, again as expected, they are "absorbed in ideas and interested in art, imaginatively enthralled by Inner Creations," and occasionally absent minded.

The Commerce teachers present a picture of higher ego-strength, are emotionally stable, calm and are constant in interests. They are not easily annoyed by things and people nor dissatisfied with their families or other restrictions of life. They are cheerful, happy-go-lucky, frank, but with "less exacting aspirations" (Cattell, Handbook, p. 87). But they are expedient and occasionally disregard rules. They lack initiative in directing, playing leading roles in dramatics, and musical compositions and bringing about changes in organisational procedures.

Contd.

Factor G

Table 58.7

Factor G

Suspiciousness Vs. Artistic Insensitivity Vs. Sensitivity

Vari- ables	Description	Science Teachers	Arts Teachers	Commerce Teachers
1	Reserved Vs. Outgoing (A)	-	-	-.529
3	Less Stable Vs. More Stable(C)	-.410	-	-
6	Expedient Vs. Conscientious- ness (G)	-	.538	-
8	Toughminded Vs. Tenderminded(I)	-	-	.781
9	Trusting Vs. Suspicious (L)	.827	-	-
13	Conservative Vs. Experi- menting (Q ₁)	-	-	.343
16	Relaxed Vs. Tense (Q ₄)	-.408	-	-
17	Environmental Sensitivity	-	-.637	-
19	Self-Strength	-	.352	.587
21	Individuality	.326	-	-
22	Artistry	-	-.755	-

Factor G for inservice Science teachers has a very high loading of .827 on variable 9 measuring trait L (Trusting Vs. Suspicious), followed by a low loading of .326 on variable 21 : Individuality. On variables 3 and 16 measuring trait C (Less Stable Vs. More Stable) and trait Q₄ (Relaxed Vs. Tense)

there are moderate negative loadings of $-.410$ and $-.408$. Evidently, this factor may be characterised as Suspiciousness.

This factor for the Arts inservice teachers has a very high negative loading of $-.755$ on variable 22 measuring Artistry. On variable 17 measuring Environmental Sensitivity there is also a high negative loading of $-.637$. There is an appreciable moderate loading of $.538$ on variable 6 measuring trait G (Expedient Vs. Conscientious), followed by a rather low loading of $.352$ on variable 19 measuring Self-strength. This factor may be characterised as Artistic insensitivity.

This factor for the Commerce inservice teachers has a very high loading of $.781$ on variable 8 measuring trait I (Toughminded Vs. Tenderminded), followed by a high loading of $.587$ on variable 19 measuring Self-strength. There is a negative loading of $-.529$ on variable 1 measuring trait A (Reserved Vs. Outgoing). The loadings on variable 13 measuring Q_1 (Conservative Vs. Experimenting), is, however, modest viz. $.343$. This, evidently, is a factor of Sensitivity.

It would mean, rather surprisingly, that Science teachers are suspicious, jealous, dogmatic and irritable. They dwell on frustrations and are suspicious of interference. They have protension, signifying "projection and inner tension" (Cattell, Handbook, p.96). It is, again, surprising that such suspicious teachers should have low ergic tensions - relaxed and composed. It is, of course,

understandable, that these Science teachers are emotionally less stable being dominated as they are, by suspiciousness. They also have moderately low individuality and would like to work alone rather than in groups.

The Arts teachers, very surprisingly, lack artistic creativity for which their education prepared them during all the years in the University. They are not only incapable of producing paintings and carvings but also lack the talent in producing stories, plays, poems and other literary pieces. They are also environmentally insensitive and are not interested in the beautiful and humorous aspects of experience and have insensitivity to meaningful relations. They also disregard rules and obligations to other people. In a word they are expedient. They possess self-confidence and a desire to excel in organizational ability. But in view of the low loadings in this variable nothing can be said with certainty.

The Commerce teachers are sensitive, tenderminded, expecting affection and seeking attention. They feel occasionally insecure and are anxious about themselves. But with all this they have expressed some sort of self-confidence and, perhaps, their insecurity motivates or compels them to take risks. Otherwise they are good natured people, trustful and easy going. Not unoften they are warmhearted and trustful. They are analytical, free thinking and radical. But in view of the modest loading on this variable nothing can be said with definiteness.

Factor H

Table 58.8

Factor H

Self-Sufficiency Vs. Aesthetic Sensitivity Vs. Environmental
Insensitivity

Vari- able	Description	Science Teachers	Arts Teachers	Commerce Teachers
2	Less Intelligent Vs. More Intelligent (B)	-.342	-	-
4	Submissive Vs. Dominant (E)	.537	-	-
5	Sober Vs. Happy-Go-Lucky (F)	-	.341	-
8	Toughminded Vs. Tenderminded(I)	-	.825	-
10	Practical Vs. Imaginative (M)	-	.333	-
11	Forthright Vs. Shrewd (N)	.726	-	-
13	Conservative Vs. Experi- menting (Q ₁)	-	-	-.339
14	Group Dependent Vs. Self- Sufficient (Q ₂)	.798	-	.377
15	Uncontrolled Vs. Controlled(Q ₃)	-	-.461	-
17	Environmental Sensitivity	-	-	-.726
19	Self-Strength	-	-.305	-
21	Individuality	.415	-	-
22	Artistry	-	-	.621

This factor for inservice Science teachers has a very high loading of .798 on variable 14 measuring trait Q₂ (Group dependent Vs. Self-sufficient), followed by a very high loading

of .726 on variable 11 measuring trait N (Forthright Vs. Shrewd). On variables 4 and 21 measuring trait E (Submissive Vs. Dominant) and Individuality there is moderate loadings of .537 and .415, respectively. On variable 2 measuring trait B (Less Intelligent Vs. More Intelligent) there is a low negative loading of -.342. This factor may be designated as one of Self-sufficiency.

For the inservice Arts teachers this factor has a very high loading of .825 on variable 8 measuring trait I (Tough-minded Vs. Tenderminded), followed by a moderate loading of .341 on variable 5 measuring trait F (Sober Vs. Happy-Go-Lucky). On variable 10 there is a low loading of .333 and it measures trait M (Practical Vs. Imaginative). On variables 15 and 19 there are negative loadings of -.461 and -.305 respectively. They measure trait Q_3 (Uncontrolled Vs. Controlled) and Self-strength, respectively. This factor may be termed as Aesthetic Sensitivity.

For the Commerce teachers this factor has a very high negative loading of -.726 on variable 17 measuring Environmental Sensitivity followed by a high loading of .621 on variable 22 measuring Artistry. There is a modest loading of .377 on variable 14 measuring trait Q_2 (Group Dependent Vs. Self-sufficient), followed again by a modest though negative loading of -.339 on variable 13 measuring Q_1 (Conservative Vs. Experimenting). Evidently this is a factor of Environmental Insensitivity.

The picture for the Science teachers would be that they are Self-sufficient, resourceful and prefer their own decisions. In group dynamics they are significantly dissatisfied with group integration. It is a factor associated with introversion. They are, besides, shrewd, astute and ambitious also but occasionally feel insecure. As warranted by an appreciably moderate loading in variable 4 they are assertive and as self-sufficient persons they are independent-minded too. They have an individuality of their own and prefer to work alone, are critical of others and think for themselves. Whether these people are less intelligent, as indicated by the low negative loading on variable 2, cannot be answered with certainty.

The picture for the Arts teachers would argue that they are sensitive persons, imaginative in Inner life and act on sensitive intuition. They expect affection and seek help and sympathy. They are uncontrolled in that they want to follow their own urges and are careless of social rules. They express their views frankly. On the basis of variables 10 and 19 they are imaginative and absorbed in ideas. And they lack self-confidence and are unwilling to take risks. But the low loadings here do not lead one to say anything with confidence.

The Commerce teachers are environmentally insensitive people. They are not open to the ideas of others and are not interested in the beautiful and humorous aspects of experience. They have also no sensitivity to meaningful relations. But they have expressed a strong capacity to produce models, paintings, produce stories, plays and other literary composi-

tions. They are moderately self-sufficient people and are resourceful, preferring their own decisions whatever they are. They are conventional, conservative and conforming. But the low loadings here do not allow one to assert this conclusion with an amount of confidence.

Factor I

Table 58.9

Factor I

Surgency Vs. Venturesomeness Vs. Favourable Teaching Attitude

Vari- ables	Description	Science Teachers	Arts Teachers	Commerce Teachers
1	Reserved Vs. Outgoing (A)	-	-	.520
3	Less Stable Vs. More Stable(C)	.512	-	-
5	Sober Vs. Happy-Go-Lucky (F)	.828	-	-
6	Expedient Vs. Conscientious(G)	-	-.300	-
7	Shy Vs. Adventurous (H)	-	.754	-
9	Trusting Vs. Suspiciousness (L)	-	-	-.360
10	Practical Vs. Imaginative (M)	-	-.454	-
14	Group Dependent Vs. Self-Sufficient (Q ₂)	-	-	.408
21	Individuality	.460	.655	-
23	Creativity	-	.321	-
24	MTAI	-	.338	.779

Factor I for the inservice teachers has a very high loading of .828 on variable 5 measuring trait F (Sober Vs. Happy-Go-Lucky), followed by a moderate loading of .512 on variable 3 measuring trait C (Less Stable Vs. More Stable). On variable 21 Individuality has a moderate loading of .460. Evidently it is a factor of Surgency.

For the inservice Arts teachers this factor has a very high loading of .754 on variable 7 measuring trait H (Shy Vs. Venturesome), followed by a high loading of .655 on variable 21 measuring Individuality. On variables 24, measuring attitude towards teaching (MTAI), 23 measuring Creativity and 6 measuring trait G (Expedient vs. Conscientious) there are uniformly low loadings of .338, .321 and -.300, respectively. On variable 10 measuring trait M (Practical Vs. Imaginative) there is a moderate loading of -.454. This factor has been characterized as Venturesomeness.

For the Commerce inservice teachers this factor has a very high loading of .779 on variable 24 measuring attitude towards teaching, followed by a moderate loading of .520 on variable 1 measuring trait Q₂ (Group Dependent Vs. Self-sufficient). There is a moderate loading of .408 on variable 14 followed by a negative loading of -.360 on variable 9 measuring L (Trusting Vs. Suspiciousness). This factor can be called one of Favourable Teaching Attitude.

It would mean that inservice Science teachers are enthusiastic, frank, quick and alert. They have had an "easier, less punishing, more optimism - creating environment"

(Cattell, Handbook, p.87). They are stable, face reality calmly and do not allow their emotions to over rule them. They are not easily annoyed by things and people nor are they dissatisfied with the world situation or their families. It is not, therefore, surprising that they have a creative individuality. They prefer to work alone rather than in groups, are self-starters and critical of others.

The picture for the inservice Arts teachers is that they are venturesome, socially bold, carefree and friendly. They do not have any unreasonable sense of inferiority. They also have a creative individuality in that they prefer to work alone rather than in groups, are self-starters, critical of others working for long hours without getting tired. They seem to be conventional and concerned with immediate interests and issues. Though worried they are steady. They have shown a very modest attitude towards teaching and this is surprising in view of the above characteristics. On variables 23 and 6 since there are low loadings, therefore, one cannot be very confident whether to rely strongly on their creative potential as measured by SAM and their lack of conscientiousness.

Commerce teachers have a very favourable attitude towards teaching. They enjoy teaching and being with their pupils. Redicule and sarcasm are absent. There is a permissive atmosphere of freedom to think and act and speak one's mind both for the teachers and pupils. Common goals and common understandings characterize the teacher pupil relationship. These teachers are self-sufficient, resourceful and prefer

their own decisions. They are, again, warmhearted, good natured and trustful. Naturally they are trusting, tolerant and conciliatory, accepting personal unimportance.

Factor J

Table 58.10
Factor J
Experimentation Vs. Tension

Vari- ables	Description	Science Teachers	Arts Teachers	Commerce Teachers
3	Less Stable Vs. More Stable (C)	.379	-	-
13	Conservative Vs. Experimenting (Q ₁)	.843	-.338	-
14	Group Dependent Vs. Self-Sufficient (Q ₂)	-	.564	-
16	Relaxed Vs. Tense (Q ₄)	-	.850	-
22	Artistry	-.364	-	-

Factor J has a very high loading of .843 on variable 13 measuring trait Q₁ (Conservative vs. Experimenting) for the inservice Science teachers, followed by a loading of .379 on variable 3 measuring trait C (Less Stable Vs. More Stable). On variables 22 measuring Artistry there is a negative loading of -.364. This factor can be termed as Experimentation.

For the inservice Arts teachers factor J has a very high loading of .850 on variable 16 measuring Q₄ (Relaxed Vs. Tense), followed by a moderately high loading of .564 on

variable 14 measuring trait Q_2 (Group Dependent Vs. Self-sufficient). On variable 13 measuring trait Q_1 (Conservative Vs. Experimenting) there is a negative loading of $-.338$. This factor has been evidently called as one of Tension.

This factor has not emerged in the case of Commerce teachers.

Evidently it is of interest to note that the Science inservice teachers are interested in experimentation and have liberal, analytical and free thinking attitudes. There is evidence that " Q_1 + person are more well-informed, more inclined to experiment with problem solutions, less inclined to moralize, less unquestioning about views generally" (Cattell, Handbook, p.104). They are emotionally mature, stable and calm. But they lack in Artistry in that they cannot, perhaps, write essays, poems and other literary compositions. Perhaps, their education in Science has not equipped them to do so (Kirkman, 1967).

The Arts inservice teachers with high ergic tensions are not relaxed, or calm or composed. This is one of the three highest-loaded factors in general anxiety QII - second stratum factors measured by 16 PF test, (Cattell, Handbook, p.108). They are, however, self-sufficient and resourceful and prefer their own decisions. But it is surprising how persons with high tensions can be self-sufficient and it is difficult to speculate. More investigations on larger population of Arts teachers are warranted. The fact that they are conservative is as it should be.

Factor K

Table 58.11
Factor K
Unconventionality

Vari- ables	Description	Science Teachers	Arts Teachers	Commerce Teachers
8	Toughminded Vs. Tenderminded(I)	-.401	-	-
10	Practical Vs. Imaginative (M)	.876	-	-

Factor K for inservice Science teachers has a very high loading of .876 on variable 10 measuring trait M (Practical Vs. Imaginative), followed by an appreciable negative moderate loading of -.401 on variable 8 measuring trait I (Toughminded Vs. Tenderminded). This factor has emerged in the inservice Science teachers only. It has been evidently called Unconventionality.

The suggestive picture for the inservice Science teachers is that they are unconventional, imaginative and absorbed in ideas. Cattell and Drevdahl (1955) and Drevdahl (1956) have found this trait to distinguish at 1 percent level of significance creative researchers and artists from administrators and teachers. The findings of this study may be taken as suggestive howsoever significant the loading here is. The sample Science teachers are unconventional, self-reliant and act on practical, logical evidence.

SECTION C
FACTOR CLUSTER OF VARIABLES IN SCIENCE, ARTS
AND COMMERCE STUDENT TEACHERS

Identification of Factors

The factors which have been identified on the basis of factor analysis for inservice Science, Arts and Commerce students are listed below :

<u>Factor</u>	<u>Science Students</u>	<u>Arts Students</u>	<u>Commerce Students</u>
A	Conscientious Teaching Attitude	Vs. Creative Initiative	Vs. Creative Self-Strength
B	Dominance	Vs. Self-Discipline	Vs. Conscientious Warmheartedness
C	Creative Environmental Sensitivity	Vs. Radical Shrewdness	Vs. Permissive Tolerance
D	Creative Initiative	Vs. Self-Sufficiency	Self Sufficiency
E	Creative Self-Strength	Vs. Surgency	Vs. Unconventional Intellectuality
F	Stability	Vs. Suspiciousness	Vs. Shrewdness
G	Venturesomeness	Vs. Conscientiousness	Vs. Self-Discipline
H	Self Discipline	Vs. Aesthetic Sensitivity	Vs. Dominance
I	Radicalism	Vs. Insecurity	Vs. Surgency
J	Insecurity	Vs. Creative Intellectuality	Vs. Radicalism
K	--	Creative Artistry	--

Factor A

Table 59.1

Factor A

Conscientious Teaching Attitude Vs. Creative Initiative
Vs. Creative Self Strength

Vari- ables	Description	Science Students	Arts Students	Commerce Students
6	Expedient Vs. Conscien- tious (G)	.678	-	-
8	Toughminded Vs. Tender- minded (I)	-.577	-	-.344
14	Group Dependent Vs. Self-Sufficient (Q ₂)	.392	-	-
17	Environmental Sensitivity	-	.403	-
18	Initiative	-	.875	-
19	Self-Strength	-	.421	.810
20	Intellectuality	-	-	.413
21	Individuality	-	-	.367
22	Artistry	-.364	-	-
23	Creativity	-	.781	.885
24.	MTAI	.640	.454	-

Factor A for Science student teachers has an appreciably high loading of .678 on variable 6 measuring trait G (Expedient Vs. Conscientious), followed by an almost equally high loading of .640 on variable 24 measuring attitude towards teaching (MTAI). On variable 8 measuring trait I (Toughminded Vs. Tenderminded) there is a negative loading of -.557, followed

by variables 14 and 22 measuring trait Q_2 (Group Dependent Vs. Self-sufficient) and Artistry, the respective loadings are .392 and -.364. Evidently this is a factor of Conscientious Teaching Attitude.

For the Arts student teachers factor A has a very high loading of .875 on variable 18 measuring Initiative, followed by an equally very high loading of .781 on variable 23 measuring Creativity. On variable 24 measuring attitude towards teaching (MTAI) the loading is .454, followed by a moderate loading of .403 on variable 17 measuring Environmental Sensitivity. On variable 19 measuring Self-Strength the loading is .421. Since there are very high loadings on variables 18 and 23 this factor for this group has been defined as Creative Initiative.

Factor A for the Commerce student teachers has a very high loading of .885 on variable 23 measuring Creativity, followed by an almost equally high loading of .810 on variable 19 measuring Self-strength. On variables 20 and 21 measuring Intellectuality and Individuality, the respective loadings are .413 and .367. On variable 8 measuring trait I there is a negative loading of -.344. This factor may be characterized as Creative Self-Strength.

The picture for the Science student teachers would be that they are characterized by a high ego strength by being conscientious, determined, responsible and emotionally disciplined. They are "planful, able to concentrate, interested in analyzing people, cautious in statements," (Cattell, Handbook, p.89). It is expected that such student teachers would exhibit

favourable attitude towards teaching as measured by MTAI. They would work together with their pupils in a social atmosphere of cooperation rather than one of competition. They would not show dominative but integrative discipline. There would be mutual trust between the student teachers and the pupils. The student teachers have been, perhaps, encouraged by the teachers college faculty members not to think in terms of their status.

These student teachers reject illusions, are self-reliant and not unwilling to take responsibilities. They *are* not unwilling to take responsibilities. They do not expect attention and affection nor are they anxious about self. They are self-sufficient, willing to work alone rather than in groups. They also have no capacity or perhaps interest in writing poems, plays and other literary compositions. Perhaps their education in Science has not equipped them with the type of artistry as lamented by Kirkman (1967). Perhaps, because of low loadings on variables 14 and 22 nothing can be said with confidence.

The picture for the Arts student teachers would be one of distinct initiative by their willingness to direct, produce and/or play lead roles in dramatics, produce new products and try to bring about changes in organisational procedures. Besides they have a major amount of individuality, environmental sensitivity, intellectuality and artistry as is evidenced by a high loading on variable 23 which is a measure of Creativity. They have self-strength in that they possess self confidence, are willing to take risks and are resourceful and versatile.

Not surprisingly, perhaps, they have demonstrated a favourable teaching attitude (MTAI). The Arts student teachers, it is expected, would demonstrate creative teaching attitudes in their classrooms.

The picture for the Commerce student teachers is that they are predominantly creative because of the highest loading on Creativity, Self-strength and also a moderate loading in Intellectuality. Paraphrased, it would mean that these Commerce student teachers have enough creative potential, self-confidence, resourcefulness and a capacity to take risks and they excell in organizational abilities. Besides, they have intellectual curiosity, enjoying challenging tasks with due imagination, preferring doing things in their own way and fashion and not following routine or prescribed things or procedures. They would like to work alone rather than in groups. But in view of the low loadings on Individuality one cannot be too emphatic about it. Similarly there is a low loading on variable 8 and one cannot say anything confidently regarding their (student teachers) toughness or unsentimentality or being self-reliant.

Contd.

Factor B

Table 59.2

Factor B

Dominance Vs. Self Discipline Vs. Conscientious Warmheartedness

Variables	Description	Science Students	Arts Students	Commerce Students
1	Reserved Vs. Outgoing (A)	-	-	.721
3	Less Stable Vs. More Stable (C)	-	-	.504
4	Submissive Vs. Dominant (E)	.771	-	-
6	Expedient Vs. Conscientious (G)	-.325	-	.775
7	Shy Vs. Adventurous (H)	-	.649	-
11	Forthright Vs. Shrewd (N)	.318	-	-
15	Uncontrolled Vs. Controlled (Q ₃)	-	.801	-
16	Relaxed Vs. Tense (Q ₄)	-.621	-	-
17	Environmental Sensitivity	-	-	.336
20	Intellectuality	.567	-	-
21	Individuality	-	.572	-
24	MTAI	-	-	-.425

Factor B for the Science student teachers has a very high loading of .771 on variable 4 measuring trait E (Submissive Vs. Dominant), followed by a high negative loading of -.621 on variable 16 measuring Q₄ (Relaxed Vs. Tense). On variable 20 measuring Intellectuality there is an appreciably

moderate loading of .567, followed by variable 11 measuring trait N (Forthright Vs. Shrewd) with a low loading of .318 and variable 6 measuring trait G (Expedient Vs. Conscientious) with a negative loading of -.325. This factor as per definition provided by Cattell (Handbook, p.86) may be defined as one of Dominance.

This factor for the Arts student teachers has a very high loading of .801 on variable 15 measuring trait Q₃ (Controlled Vs. Uncontrolled) followed by a high loading of .649 on variable 7 measuring trait H (Shy Vs. Adventurous). On variable 21 measuring Individuality there is a marked moderate loading of .572. This factor may be defined as one of Self-Discipline.

Factor B for the Commerce student teachers has a very high loading of .775 on variable 6 measuring trait G (Expedient Vs. Conscientious), followed by an almost equally high loading of .721 on variable 1 measuring trait A (Reserved Vs. Outgoing). On variable 3 measuring trait C (Less Stable Vs. More Stable) there is a moderate loading of .504, followed by a low loading of .336 on variable 17 measuring Environmental Sensitivity. On variable 24 measuring attitude towards teaching there is a moderate though negative loading of -.425. This factor has been characterized as one of Conscientious Warmheartedness.

This would suggest a picture of assertion, unconventionality and competitiveness on the part of Science student teachers. "Occupationally, higher dominance scores are obtained," writes Cattell (Handbook, p.86) "by athletes,

research scientists and lower scores are obtained by farmers, cooks and janitors." The Science student teachers of this investigation do not belong to the class of farmers, cooks or even janitors! Perhaps, it is a normal expectation that student teachers with such a thrust should be free from id pressures and relaxed and composed without undue frustrations, or tensions. Their intellectuality is characterised by curiosity, enjoying challenging tasks, have a high degree of imagination and a total dislike for a routinized frame of work. They want to chalk their own paths. Little wonder that they are shrewd, smart and with a calculating mind. They are also expedient in that they disregard rules, etc. But the low loadings on traits N and G make one hesitant to make a positive statement in this regard.

The picture for the Arts student teachers is one of self-discipline, controlled, exacting will power. They want to follow their own self-images. "Such persons", writes Cattell (Handbook, p.106) "exhibit self control, persistence, foresight, considerateness of others and conscientiousness." Q_3 is a significant factor in QVIII - high superego - measured by second-stratum factors measured by 16 PF test. The Arts student teachers are adventurous, friendly and socially bold without any "unreasonable sense of inferiority." These student teachers show a sort of resilience that is needed to absorb "psychological shocks" (Start, 1966) in teaching a class of 50-60 or more students in the schools. They are also moderately, of course, individual in that they are critical of others and

are prepared to work for long hours without getting tired. Their work is their leisure.

The picture for the Commerce student teachers would be one of conscientiousness, perserving, and determinded individuals. They are dominated by a sense of duty and are concerned about moral standards and rules. A "G+ persons", writes Cattell (Handbook, p.89) "views himself correct in, and a guardian of, manners and morals." They are also responsible. A very high positive loading on trait A would suggest that these student teachers are warmhearted, outgoing and trustful. They enjoy social recognition and are willing to "go along" with expediency. Besides, they are emotionally mature, stable and face reality calmly. They are not annoyed by things and people nor dissatisfied with the world or family life. They are environmentally sensitive to some extent. In view of all these redeeming characteristics of an "effective teacher" it is really surprising as to why or how they have indicated a negative or/an unfavourable attitude towards teaching. A possible but speculative explanation would be that the positive traits listed above do not contribute to effective teaching (teacher effectiveness or its correlates have not been to date operationally defined) or that the organisation of teachers colleges, the caliber of its faculty members and the programmes followed are soulless and inspid (Report of the Education Commission, 1966) that they do not inspire conscientious student teachers to have a positive attitude towards teaching. However, the explanation is at best tentative and needs further examination and verification.

Factor C

Table 59.3

Factor C

Creative Environmental Sensitivity Vs. Radical Shrewdness
Vs. Permissive Tolerance

Vari- ables	Description	Science Students	Arts Students	Commerce Students
8	Toughminded Vs. Tender- minded (I)	-	-	.403
9	Trusting Vs. Suspicious (L)	-	-	-.819
11	Forthright Vs. Shrewd (N)	-	.653	-
13	Conservative Vs. Experi- mental (Q ₁)	-	.808	-
14	Group Dependent Vs. Self- Sufficient (Q ₂)	-	-	.351
16	Relaxed Vs. Tense (Q ₄)	-	-	.576
17	Environmental Sensitivity	.780	-	-
19	Self-Strength	-	-.405	-
21	Individuality	.517	.436	-
22	Artistry	.664	-	-
23	Creativity	.562	-	-

Factor C for Science student teachers has a very high loading of .780 on variable 17 measuring Environmental Sensitivity, followed by an appreciable high loading of .664 on variable 22 measuring Artistry, this is again followed by high moderate loadings of .562 and .517 on variables 23 and 21.

measuring Creativity and Intellectuality. All these variables are the different dimensions of Creative potential measured by SAM. Evidently, this is a factor of Creative Environmental Sensitivity.

Factor C for the Arts student teachers has an appreciably very high loading of .808 on variable 13 measuring trait Q_1 (Conservative Vs. Experimental) followed by a pretty high loading of .653 in variable 11 measuring trait N (Forthright Vs. Shrewd). On variables 21 and 19 measuring Individuality and self-strength the respective moderate loadings are to the tune of .436 and -.405. Taking into consideration the loadings on variables 13 and 11 this factor has been named as Radical Shrewdness.

Factor C for the Commerce teachers has a very high negative loading of -.819 on variable 9 measuring trait L (Trusting Vs. Suspicious), followed by an appreciably moderate loading of .576 on variable 16 measuring trait Q_4 (Relaxed Vs. Tense). On variable 8 and 14 measuring traits I (Toughminded Vs. Tenderminded) and Q_2 (Group Dependent Vs. Self-sufficient) the respective loadings are .403 and .351. This factor can be termed as Permissive Tolerance.

The picture for the Science student teachers would be that they are environmentally sensitive in that they are open to the ideas of others, are interested in the beautiful and humorous aspect of experience and have a high degree of sensitivity to meaningful relations. Again, they are interested in producing objects, models, stories, plays, poems

and other literary pieces. It seems rather surprising that Science student teachers have indicated an interest in Artistry because science specialists, by and large, do not have the type of artistry indicated here (Kirkman, 1967). They have a modest amount of individuality, and prefer to work alone rather than in groups, are critical of others and think for themselves. Besides, they have a modest amount of self confidence and are willing to take risks. It seems that the popular conclusion of Hudson (1967, 1959), that Science students, who have to do practical things mostly are not creative as compared to Arts students, does not hold true for the Science student teachers of this study.

For the Arts student teachers the picture that emerges is that they have radical sophistication, are experimental, liberal and free thinking. They are interested "in breaking the crust of custom and tradition and in leading and persuading people, in group dynamics they contribute significantly more remarks to group discussion, a percentage being of a critical nature" Cattell (Handbook, pp.104-105). They seem, as judged by the second order factor (Cattell, p.119) to have an independent frame of mind. These characteristics, understandably, do not suggest an Arts syndrome but one has to keep in mind that the sample Arts student teachers are in their twenties and living in a world of change and flux, stress and strain. They can not be expected as novices to have developed the angularities of their specialisation as painted by the popular mind. They are also shrewd, worldly astute and

insightful not only about their own selves but others too. It is not, therefore, surprising that in the creativity dimension they are critical of others and do think independently. But with all this they have not the self-strength to take risks or have a desire to excel in organisational abilities.

The picture for the Commerce student teachers would be that they are permissive and tolerant, prepared to accept personal unimportance. They are ready to forget difficulties. Unlike high L persons they are not critical and derogatory of others, nor do they expect children to show more respect to elders (Cattell, Handbook, pp.249-252). They are not anxious also. As expected such youngmen would be without id pressures, but relaxed, composed and free from tensions. Besides, they are tenderminded and as persons who accept personal unimportance, they expect affection, attention, help and sympathy. To some extent they are self-sufficient but in view of the low loading in this variable one cannot say anything with confidence.

Contd.

Factor D

Table 59.4
Factor D
Creative Initiative Vs. Self-Sufficiency

Variables	Description	Science Students	Arts Students	Commerce Students
1	Reserved Vs. Outgoing (A)	.361	-	-
2	Less Intelligent Vs. More Intelligent (B)	-.345	-	-
3	Less Stable Vs. More Stable (C)	-	.325	-
4	Submissive Vs. Dominant (E)	-	-.313	-
5	Sober Vs. Happy-Go-Lucky (F)	.772	-	-
7	Shy Vs. Adventurous (H)	-	.325	-
10	Practical Vs. Imaginative (M)	-	-.478	-
11	Forthright Vs. Shrewd (N)	-.311	-	-
12	Placid Vs. Insecure (O)	-	-	-.542
14	Group Dependent Vs. Self-Sufficient (Q ₂)	-	.820	.716
18	Initiative	.809	-	-
19	Self-Strength	-	-.435	-
22	Artistry	-	-	.583
24	MTAI	-	-	.538

Factor D for the Science student teachers has very high loading of .809 on variable 18 measuring Creative Initiative, followed by a very high loading of .772 on variable

5 measuring trait F (Sober Vs. Happy-Go-Lucky). On variables 11, 2 and 1 measuring trait N (Forthright Vs. Shrewd), B (Less Intelligent Vs. More Intelligent), A (Reserved Vs. Outgoing), the loadings are uniformly low and to the tune of $-.311$, $-.345$ and $.361$, respectively. This factor has been termed as Creative Initiative.

This factor for the Arts student teachers has a very high loading of $.820$ on variable 14 measuring trait Q_2 (Group Dependent Vs. Self-sufficient), followed by low loadings of $.325$ and $.325$ in variables 3 measuring trait C (Less Stable Vs. More Stable) and variable 7 measuring trait H (Shy Vs. Adventurous). On variable 10 measuring trait M (Practical Vs. Imaginative) there is a pretty moderate negative loading of $-.478$, followed by a moderate loading of $-.435$ on variable 19 measuring Self-strength. This is again followed by a low negative loading of $-.313$ in variable 4 measuring trait E (Submissive Vs. Dominant). This factor has been characterized as Self-Sufficiency.

Factor D for the Commerce student teachers has a very high loading of $.716$ on variable 14 measuring trait Q_2 (Group Dependent Vs. Self-Sufficient), followed by an appreciable moderate loading of $.583$ and $.538$ on variables 22 measuring Artistry and 24 measuring attitude towards teaching (MTAI). On variable 12 measuring trait O (Placid Vs. Insecure), there is a negative loading of $-.542$. This factor has been called Self-Sufficiency.

The picture suggested by the Science student teachers is one of robust creative initiative in directing and producing dramas and musical production, and the production of new formulas or products. They are also eager to bring about changes in the organisational procedures when employed. Whether such an initiative would be appreciated and allowed to operate is, to say, the least, doubtful. They are enthusiastic, cheerful and frank, worldly astute and insightful not only for themselves but for others also. They are reserved, cool, aloof and prepared to stand by their own ideas. But they are intellectually not very bright. This intellectuality is obviously convergent. Be that as it may, the loadings on variables 1, 2 and 11 are low and nothing can be said with definiteness.

The picture for the Arts student teachers is one of self-sufficiency, resourcefulness and preference for their own ideas. They are alert to the practical needs and guided by objective realities. Though occasionally worried they are steady. But it is to be noted that they lack self-strength and have no self-confidence. They are not willing to take risks or have a desire to excel in organisational abilities. It seems rather odd that people who are primarily characterized by self-sufficiency and resourcefulness should lack self-confidence and self-strength. It is difficult to speculate. Perhaps their self-sufficiency seems to be theoretical and academic and not practical and real. Judged by the low loadings on traits C (Stability),

E (Submissiveness) and H (Adventuresomeness) much cannot be taken for granted.

The picture for the Commerce student teachers would be that they are self-sufficient, resourceful and prefer their own decisions. They are not sound followers or "joiners", nor dependent on group opinions. They are introverted as "Q₂ is a central primary in the invia (introversion) second order factor" (Cattell, Handbook, p.105). The self-sufficiency trait is one ^{of} the important characteristics of a creative person. It is self-sufficiency that favours creativity and independence of mind. They have an amount of Artistry and can write essays, compositions and other literary pieces. They are self-assured, placid and self-confident. They do not worry, or get easily depressed. Their attitude towards teaching is favourable. It seems that, perhaps, Q₂ (Self-sufficiency) and O- (Placidity) are in a way related to positive teaching attitudes for these teachers under the conditions of this study. Cattell and Drevdahl (1955) have shown that among other traits O- is a characteristic of teaching effectiveness. Kaul (1974) also found O-, among other traits, to characterize popular teachers.

Contd.

Factor E

Table 59.5

Factor E

Creative Self-Strength Vs. Surgency Vs. Unconventional
Intellectuality

Variables	Description	Science Students	Arts Students	Commerce Students
1	Reserved Vs. Outgoing (A)	.421	-	-
5	Sober Vs. Happy-Go-Lucky (F)	-	.841	-
10	Practical Vs. Imaginative (M)	-	-	.781
16	Relaxed Vs. Tense (Q ₄)	-	-.535	-
19	Self-Strength	.824	.444	-
20	Intellectuality	.470	-	.718
21	Individuality	-	-	.573
23	Creativity	.671	-	-

Factor E for Science student teachers has a very high loading of .824 on variable 19 measuring creative Self-strength followed by an appreciably high loading of .671 on variable 23 measuring Creativity (Composite). On variable 20 measuring Intellectuality there is a pretty moderate loading of .470, followed by variable 1 measuring trait A (Reserved Vs. Outgoing) where the loading is .421. This factor is evidently one of Creative Self-Strength.

For the Arts student teachers this factor has a very high loading of .841 on variable 5 measuring trait F (Sober Vs. Happy-go-Lucky) followed by a moderate loading of .444 on

variable 19 measuring Self-strength. On variable 16 measuring trait Q_4 (Relaxed Vs. Tense) there is a pretty moderate negative loading of $-.535$. This factor has been termed as one of Surgency.

Factor E for the Commerce student teachers has a very high loading of $.781$ on variable 10 measuring trait M (Practical Vs. Imaginative), followed by an almost equally very high loading of $.718$ on variable 20 measuring Intellectuality. On variable 21 measuring Individuality there is a moderate loading of $.573$. This factor has been termed as Unconventional Intellectuality.

This would mean that the Science student teachers have Self-strength and possess self-confidence, are resourceful, versatile and willing to take risks with a desire to excel in organizational abilities. They have besides, an attitude of openness to the ideas of others and have sensitivity to meaningful relations. They have an amount of initiative and intellectual curiosity and enjoy challenging tasks. They are ready to work for long hours without getting tired. Their work is their leisure. They do write essays and other literary compositions occasionally. Besides, they are outgoing, warmhearted and good natured. They enjoy social recognition and are not cool or aloof but attentive to people.

The Arts student teachers are happy-go-lucky, talkative and cheerful. Perhaps, "they have had," as Cattell (Handbook, p.87) writes "an easier, less punishing, more optimism creating environment... (and are with) less exacting aspirations." They have self-strength and self-confidence, are resourceful and willing to take risks. They have organisational abilities as well. It is no surprise that they are without any id-pressures but are relaxed, calm and composed. Anxieties do not face them. Perhaps, as happy-go-lucky people they can face the situations calmly.

The picture for the Commerce students would be one of unconventionality. They are "internally autonomous thinking" (Cattell, Handbook, p.98), people. Occasionally, they are absorbed in ideas, etc. etc. Their pronounced intellectuality enables them to have intellectual curiosity and enjoy challenging jobs. Fired by imagination they have a preference for adventure over routine. They like reconstructing things and ideas to form something different and dislike doing things in a prescribed routine way. They would like to work alone rather than in groups. They are not unoften critical of others and think for themselves. They would like to work for long hours without getting tired.

Factor F

Table 59.6

Factor F

Stability Vs. Suspiciousness Vs. Shrewdness

Vari- ables	Description	Science Students	Arts Students	Commerce Students
1	Reserved Vs. Outgoing (A)	-	.718	-
2	Less Intelligent Vs. More Intelligent (B)	.337	-	-
3	Less Stable Vs. More Stable (C)	.880	-	-
7	Shy Vs. Adventurous (H)	-	-	.339
8	Toughminded Vs. Tender- minded (I)	-	-	-.538
9	Trusting Vs. Suspicious (L)	-	.831	-
11	Forthright Vs. Shrewd (N)	-	-	.814
15	Uncontrolled Vs. Controlled (Q ₃)	-	-	-.355
16	Relaxed Vs. Tense (Q ₄)	-.374	-.374	-
21	Individuality	.473	-	-

This factor for the Science student teachers has a very high loading of .880 on variable 3 measuring trait C (Less Stable Vs. More Stable), followed by a moderate loading of .473 on variable 21 measuring Individuality. On variable 2 measuring trait B (Less Intelligent Vs. More Intelligent) there is a low loading of .337, followed by a negative loading of -.374 on variable 16 measuring trait Q₄ (Relaxed Vs. Tense). This factor has been termed as one of Stability.

Factor F for the Arts student teachers has a very high loading of .831 on variable 9 measuring trait L (Trusting Vs. Suspicious), followed by a very high loading of .718 on variable 1 measuring trait A (Reserved Vs. Outgoing). On variable 16 measuring trait Q₄ (Relaxed Vs. Tense) there is a negative loading of -.374. Evidently it is a factor of Suspiciousness.

Factor F for the Commerce student teachers has a high loading of .814 on variable 11 measuring trait N (Forthright Vs. Shrewd), followed by a low loading of .339 on variable 7 measuring trait H (Shy Vs. Adventurous). On variable 8 measuring trait I (Toughminded Vs. Tenderminded) there is a negative loading of -.538, followed by a low negative loading of -.355 on variable 15 measuring trait Q₃ (Uncontrolled Vs. Controlled). Evidently this factor may be termed as one of Shrewdness.

The picture for the Science student teachers would be that these youngmen are stable, unruffled and emotionally mature. They are not easily annoyed by things and people and are satisfied with the world situations, family and the restrictions of life. In short, they do not feel unable to cope with life and its problems. They would like to be alone, are critical of others and think for themselves. They are, by and large, relaxed, calm and composed. They are not prone to anxieties. They are intelligent to some extent but the low loadings on variables 2 and 16 does not enable one to say anything with definiteness.

The Arts student teachers are predominantly suspicious with protension, which according to Cattell (Handbook, p.96) signifies "projection and inner tension." They are jealous and dwell on their frustrations. They would like other people to accept responsibility over errors. But it is rather difficult to reconcile as to how suspicious people could be warm-hearted and easy going. The point cannot be dismissed lightly in view of the very high loading in the trait under reference, viz A (Positive pole). It is difficult to speculate and a ready explanation is difficult to come by. Could it be, perhaps, that they try to cover their psychological inadequacies and resort to some sort of defence mechanism by adopting an attitude of warmheartedness. One cannot be positive about it. Again, how could a group of suspicious youngmen with their inner tensions feel relaxed, calm and unfrustrated - without id tensions? It seems, perhaps, - it is a wild hunch - that their ratings on trait A and Q₄ are a mere facade. Further research on larger sample is needed.

The picture suggested by the Commerce teachers is that they are characterized by Shrewdness, are astute and polished. They are insightful not only regarding themselves but others also. Being ambitious they are possibly insecure sometimes. "High N are," writes Cattell (Handbook, p.101) "individuals to be kindly tolerant of most people and their failings." They are self-reliant and acting on practical, logical evidence. By and large, they do not dwell on physical disabilities. Their venturesomeness and laxness with regard to social rules

cannot be confidently commented upon in view of the low loadings in variables 7 and 15.

Factor G

Table 59.7

Factor G

Venturesomeness Vs. Conscientiousness Vs. Self-Discipline

Vari- ables	Description	Science Students	Arts Students	Commerce Students
2	Less Intelligent Vs. More Intelligent (B)	-	.403	-
3	Less Stable Vs. More Stable (C)	-	.595	-
6	Expedient Vs. Conscien- tious (G)	-	.773	-
7	Shy Vs. Adventurous (H)	.830	-	.698
9	Trusting Vs. Suspicious (L)	.343	-	-
10	Practical Vs. Imaginative (M)	.725	-	-
15	Uncontrolled Vs. Controlled (Q ₃)	-	-	.772
22	Artistry	-	-	.448
24	MTAI	-	-	-.331

Factor G for the Science student teachers has a very high loading of .830 on variable 7 measuring trait H (Shy Vs. Adventurous), followed by a high loading of .725 on variable 10 measuring trait M (Practical Vs. Imaginative). On variable 9 trait L (Trusting Vs. Suspicious) there is a low loading of .343. Evidently, this is a factor of Venturesomeness.

This factor for the Arts student teachers has a very high loading of .773 on variable 6 measuring trait G (Expedient Vs. Conscientious), followed by a loading of .595 on variables 3 measuring trait C (Less Stable Vs. More Stable). On variable 2 measuring trait B (Less Intelligent Vs. More Intelligent) there is a moderate loading of .403. This factor obviously is one of Conscientiousness.

Factor G for the Commerce student teachers has a very high loading of .772 on variable 15 measuring trait Q₃ (Uncontrolled Vs. Controlled), followed by a high loading of .698 on variable 7 measuring trait H (Shy Vs. Adventurous). On variable 22 measuring Artistry there is a moderate loading of .448, followed by a low negative loading of -.331 on variable 24 measuring attitude towards teaching (MTAI). This factor may be characterised as Self-discipline.

The Science student teachers are venturesome, socially bold and are not shy or tormented by an unreasonable sense of inferiority. They show little inhibition by environmental threats. This trait is an asset to the would be Science teachers in that "presumably, this factor is a very important one in distinguishing suitability for those occupations demanding ability to face wear and tear in dealing with people and grueling emotional situations" (Cattell, Handbook, p.92). Teaching is an occupation that needs a sort of resilience to withstand hardship and, hopefully, the Science student teachers are well-equipped to face "grueling emotional situations" in a class of 60-70 pupils from diverse socio-economic backgrounds.

Besides, they are not rule bound but unconventional and absorbed in ideas and the like. This factor is a marked trait of creative minds. But they are suspecting and not ready to forget frustrations readily. But in view of low loading on this trait (I) nothing can be said with definiteness.

The Arts students are conscientious, determined, emotionally disciplined and dominated by a sense of duty. They are concerned about moral standards and rules. This trait represents "persistence, freedom from oscillation, and good organization of thinking" (Cattell, Handbook, p.89). They are emotionally stable also and are not unduly ruffled or worried. They do not evade responsibilities nor tend to give up things when faced with difficulties. They have a moderate amount of intellectual adaptability. All these characteristics are a rare combination in the personality configuration of teachers.

The Commerce student teachers are self-disciplined with an exacting will power, socially precise and follow their self-images. They are free of anxiety also. They are besides venturesome, socially bold and not tormented by a sense of inferiority. They too have a resistance to withstand hardships and emotional situations in teaching-learning process. These student teachers have an interest in producing plays, writing poems and other literary compositions. But their attitude towards teaching as measured by MTAI is not favourable. But in view of low loadings on this variable nothing can be said with certainty.

Factor H

Table 59.8

Factor H

Self Discipline Vs. Aesthetic Sensitivity Vs.
Dominance

Variables	Description	Science Students	Arts Students	Commerce Students
2	Less Intelligent Vs. More Intelligent (B)	-	-	.640
3	Less Stable Vs. More Stable (C)	-	.310	-
4	Submissive Vs. Dominant (E)	-	.563	.748
8	Toughminded Vs. Tenderminded (I)	-	.837	-
11	Forthright Vs. Shrewd (N)	-.595	-	-
12	Placid Vs. Insecure (O)	-	-	.397
15	Uncontrolled Vs. Controlled (Q ₃)	.790	-	-
17	Environmental Sensitivity	-	-	.454
21	Individuality	-	-.352	-

Factor H for the Science student teachers has an appreciably high loading of .790 on variable 15 measuring trait Q₃ (Uncontrolled Vs. Controlled) followed by a negative high loading of -.595 on variable 11 measuring trait N (Forthright Vs. Shrewd). Obviously this is a factor of Self-discipline.

Factor H for the Arts student teachers has a very high loading of .837 on variable 8 measuring trait I (Toughminded Vs. Tenderminded), followed by high loading of .563 on variable

4 measuring trait E (Submissive Vs. dominant). While on variable 3 measuring trait C (Less Stable Vs. More Stable) there is a positive low loading of .310, on variable 21 measuring Individuality, there is a negative loading of -.352. This factor, in view of a very high loading in trait I, may be characterized as one of Aesthetic Sensitivity.

Factor H for the Commerce student teachers has a very high loading of .748 on variable 4 measuring trait E (Submissive Vs. Dominant), followed by a high loading of .640 on variable 2 measuring trait B (Less Intelligent Vs. More Intelligent). There is a moderate loading of .397 on variable 12 measuring trait O (Placid Vs. Insecure). There is a moderate loading of .454 on variable 17 measuring Environmental Sensitivity. This factor may be characterized as one of Dominance.

The suggested picture for the Science student teachers would be that they possess a high degree of self-sentiment, are controlled, with an exacting will power, trying always to follow their self-images. According to Cattell (Handbook, p. 107) Q_3+ is negative loaded in general anxiety second-order factor QII. Interestingly, "high Q_3 is associated", as observed by Cattell, "with success in mechanical, mathematical and productive organisational activities." And it is as it should be. They are forthright, unpretentions, spontaneous - in a word down-to-earth.

The Arts student teachers are in possession of artistic interests and are sensitive. They have an imaginative and an aesthetic mind, with a love for dramatics. According to Cattell

(Handbook, p. 94) trait I+ is a major primary component of QIII (second-stratum factor) which indicates Pathemia and such individuals (Pathemic) show a tendency to feel rather than to think, (p. 119). They are also fairly dominant, assertive and independent minded. They raise group problems and criticise group defects. Perhaps, high I and E might be significant factors of artistic creativity. To some extent they are stable and calm, lacking in individuality. But the low loadings on variables 3 and 21 do not enable one to say anything with an amount of certainty.

The picture for the Commerce student teachers would be one of dominance, assertion, independent mindedness and unconventionality. "They, 'feel free to participate', they raise group problems, and they criticise group defects" Cattell (Handbook, p.86). They are also intelligent, insightful, and fast learning. They have a fair degree of environmental sensitivity to meaningful relations. They are rather apprehensive, worrying and anxious. But in view of the low loading on the last variable 15 measuring trait O, nothing can be said with confidence.

Contd.

Factor I

Table 59.9

Factor I

Radicalism Vs. Insecurity Vs. Surgency

Vari- ables	Description	Science Students	Arts Students	Commerce Students
2	Less Intelligent Vs. More Intelligent (B)	.434	.321	-
3	Less Stable Vs. More Stable (C)	-	-	.421
4	Submissive Vs. Dominant (E)	-	-	-
5	Sober Vs. Happy-Go-Lucky (F)	-	-	.802
8	Toughminded Vs. Tender- minded (I)	.357	-	-
12	Placid Vs. Insecure (O)	-	.764	-
13	Conservative Vs. Experi- menting (Q ₁)	.814	-	-
14	Group Dependent Vs. Self- Sufficient (Q ₂)	.530	-	-
17	Environmental Sensitivity	-	.529	-
18	Initiative	-	-	-.654
21	Individuality	-.308	-	-
24	MTAI	-	-.609	-

Factor I for the Science student teachers has a very high loading of .814 on variable 13 measuring trait Q₁ (Conser-
vatism Vs. Experimenting), followed by a moderate loadings of
.530, and .434 on variables 14 measuring trait Q₂ (Group

Dependent Vs. Self-Sufficient) and variable 2 measuring trait B (Less Intelligent Vs. More Intelligent), respectively. On variable 8 measuring trait I (Toughminded Vs. Tenderminded) there is a low loading of .357, followed again by a low negative loading of -.308 on variable 21 measuring Individuality. This factor, evidently is one of Radicalism.

For the Arts student teachers factor I has a pretty high loading of .764 on variable 12 measuring trait O (Placid Vs. Insecure), followed by a moderate loading of .529 on variable 17 measuring Environmental Sensitivity. Next there is a high negative loading of -.609 on variable 24 measuring attitude towards teaching (MTAI). On variable 2 measuring trait B (Less Intelligent Vs. More Intelligent) there is a low loading of .321. This factor may be termed as one of Insecurity.

Factor I for the Commerce student teachers has a very high loading of .802 on variable 5 measuring trait F (Sober Vs. Happy-Go-Lucky), followed by a moderate loading of .421 on variable 3 measuring trait C (Less Stable Vs. More Stable). There is a high though negative loading of -.654 on variable 18 measuring Initiative. This factor may be termed as one of Surgency.

The Science student teachers are radical free thinking and experimenting, interested in breaking the crust of custom and tradition. They contribute "more remarks to discussion, a percentage being of a critical nature" Cattell (Handbook, p.105). That they are, as Science student teachers,

interested to experiment with problem solutions and less inclined to moralize, is not surprising. But it is not surprising also that once they enter their "second training" in their schools as regular teachers their unique characteristics would not be allowed to grow but nipped in the bud. These Science student teachers are self-sufficient, resourceful and prefer their own decisions. They are likely to be introverts as "Q₂ is a central primary in the invia (introversion) second-order factor" (Cattell, Handbook, p.105). Obviously, they are more intelligent characterized by intellectual adaptability. They are tenderminded and lack individuality in that they do not want to work alone and think for themselves. But the low loading on variables 8 and 21 do not encourage one to say anything with definiteness regarding the degree of importance to be attached to them.

The Arts student teachers feel insecure, worrying and anxious. They occasionally brood and feel lonely. "Clinically", writes Cattell (Handbook, p.102) "O is very important, first as one of the largest factors in anxiety." So these student teachers are anxiety ridden, feeling some sort of instability and thus begetting maladjustment. Though they have the redeeming quality of being environmentally sensitive in being responsive to the ideas of others and interested in the beautiful and humorous aspects of experience, they lack to exhibit a favourable attitude towards teaching. Now it is understandable that young teachers who feel insecurity,

worry and anxiety cannot show those characteristics which characterize good teachers. They would, as a result, resort to maladjusted behaviour which would not allow them to teach with confidence and work for a permissive atmosphere of freedom to think, act and speak ones mind. The low positive loading on trait B (Less Intelligent Vs. More Intelligent) cannot possibly be commented upon confidently.

The picture for the Commerce student teachers could be that they have a high amount of surgency, are happy-go-lucky, cheerful and frank. "In group interaction measures", writes Cattell (Handbook, p.88) "surgents make many group - favourable remarks... and are widely accepted." They are stable, emotionally mature, calm and unruffled. But they significantly lack initiative in producing or playing dramatics and musical compositions. They are also slow in producing new formulas or products and bring about changes in organisational procedures.

Contd.

Factor J

Table 59.10

Factor J

Insecurity Vs. Creative Intellectuality Vs. Radicalism

vari- ables	Description	Science Students	Arts Students	Commerce Students
1	Reserved Vs. Outgoing (A)	.348	-	-
2	Less Intelligent Vs. More Intelligent (B)	-	.485	-.424
9	Trusting Vs. Suspicious (L)	.475	-	-
12	Placid Vs. Insecure (O)	.840	-	-
13	Conservative Vs. Experi- menting (Q ₁)	-	-	.807
18	Initiative	-	-	.316
20	Intellectuality	-	.868	-
21	Individuality	-	-	.337
23	Creativity	-	.362	-

Factor J for Science student teachers has a very high loading of .840 on variable 12 measuring trait O (Placid Vs. Insecure), followed by a moderate loading of .475 on variable 9 measuring trait L (Trusting Vs. Suspicious). On variable 1 measuring trait A (Reserved Vs. Outgoing) there is a low loading of .348. This factor may be termed as one of Insecurity.

For the Arts student teachers this factor has a very high loading of .868 on variable 20 measuring Intellectuality,

followed by a moderate loading of .485 on variable 2 measuring trait B (Less Intelligent Vs. More Intelligent). There is a low loading of .362 on variable 23 measuring Creativity. This factor has accordingly been designated as one of Convergent Intellectuality.

Factor J for the Commerce student teachers has a very high loading of .807 on variable 13 measuring trait Q₁ (Conservation Vs. Experimenting), followed by a moderate negative loading of -.424 on variable 2 measuring trait B (Less Intelligent Vs. More Intelligent). On variable 18 and 21 measuring Initiative and Individuality there are loadings of .316 and .337, respectively. Obviously it is a factor of Radicalism.

The picture for the Science student teachers would be that they are insecure, worrying and anxious. They occasionally brood and feel lonely. "Clinically", writes Cattell (Handbook, p.102) "O is a very important, first one of the largest factors in anxiety." Being anxiety ridden they experience some sort of maladjustment. Besides, they have a moderate amount of inner tension making them suspicious and irritable. They dwell on their own frustrations. They are outgoing and warmhearted, a fact which cannot be testified with an amount of confidence in view of the low loading on variable 1.

The Arts student teachers are characterized by creative intellectuality having intellectual curiosity, enjoying challenging tasks, possessed of imagination. They like to reconstruct things and ideas differently, preferring to do things in an original manner and not following a prescribed

routine course of action. They are also moderately intelligent which enables them to have intellectual adaptability. Their total creativity with low loading cannot be commented upon confidently.

The picture for the Commerce student teachers here is that they are radical, with an experimental attitude. They are free thinking and interested in breaking the crust of custom and tradition. They want to experiment with problem solutions and are less inclined to moralize. But surprisingly, as revealed by the results they are moderately less intelligent judged on the basis of convergent thinking. They have a low amount of initiative and individuality. But low loadings on variables 18 and 21 measuring Initiative and Individuality do not enable one to take this phenomenon with an amount of confidence.

Factor K

Table 59.11
Factor K
Creative Artistry

Vari- ables	Description	Science Students	Arts Students	Commerce Students
3	Less Stable Vs. More Stable (C)	-	-.336	-
4	Submissive Vs. Dominant (E)	-	-.338	-
22	Artistry	-	.887	-

Factor K has emerged only in the Arts student teachers group. This factor has a very high loading of .887 on variable 22 measuring Artistry, followed by a low negative loading of -.336 on variable 3 measuring trait C (Less Stable Vs. More Stable). On variable 4 measuring trait E (Submissive Vs. Dominant) there is also a low negative loading of -.338. This factor has been termed as Creative Artistry.

The suggested picture for the Arts student teachers would be that they are talented youngmen with a capacity to produce objects, models, paintings, etc. They can write stories, plays, poems, and other literary compositions. This phenomenon is as it should be because the education in Arts subjects has made them able to write short stories, novels and other literary pieces. They are less stable and more submissive. But in view of low loadings on variables 3 and 4 nothing can be said with an amount of definiteness.

SECTION D

FACTOR CLUSTER OF VARIABLES IN INSERVICE SCIENCE
TEACHERS AND SCIENCE STUDENT TEACHERS

Identification of Factors

The factors which have been identified on the basis of factor analysis for inservice Science teachers and Science student teachers are listed below :

<u>Factor</u>	<u>Inservice Science Teachers</u>	<u>Science Student Teachers</u>
A	Intellectual Creativity	Vs. Conscientious Teaching Attitude
B	Environmental Sensitivity	Vs. Dominance
C	Conscientious Teaching Attitude	Vs. Creative Environmental Sensitivity
D	Apprehensiveness	Vs. Creative Initiative
E	Venturesomeness	Vs. Creative Self-strength
F	Self-Discipline	Vs. Stability
G	Suspiciousness	Vs. Venturesomeness
H	Self-Sufficiency	Vs. Self-Discipline
I	Surgency	Vs. Radicalism
J	Experimentation	Vs. Insecurity
K	Unconventionality	---

Factor A

Table 60.1

Factor A

Intellectual Creativity Vs. Conscientious Teaching
Attitude

Vari- ables	Description	Science Teachers	Science Students
6	Expedient Vs. Conscientious (G)	-	.678
8	Toughminded vs. Tenderminded (I)	-	-.557
14	Group Dependent Vs. Self- Sufficient (Q ₂)	-	.392
19	Self Strength	.678	-
20	Intellectuality	.826	-
22	Artistry	-	-.364
23	Creativity	.798	-
24	MTAI	-	.640

Factor A for inservice Science teachers has a very high loading of .826 on variable 20 measuring Intellectuality, followed by two more high loadings of .798 and .678 on variables 23 and 19 measuring Creativity, and Self-strength, respectively. Evidently all the three variables with these high loadings pertain to SAM, a measure of creative potential. It is, therefore, a factor of Intellectual Creativity.

Factor A for Science student teachers has an appreciably high loading of .678 on variable 6 measuring G (Expedient Vs. Conscientious), followed by an equally high loading of .640 on

variable 24 measuring attitude towards teaching (MTAI). On variable 8 measuring trait I (Toughminded Vs. Tenderminded) there is a moderate negative loading of $-.557$, followed by variables 14 and 22 measuring trait Q_2 (Group Dependent Vs. Self-Sufficient) and Artistry. The respective loadings are $.392$ and $-.364$. Evidently, this is a factor of Conscientious Teaching Attitude.

This would mean that the inservice Science teachers are intellectually curious, enjoying challenging tasks, have enough imagination, want to reconstruct things according to their own ideas, and do not want to follow a routine or a prescribed path. They have, besides, high scores in creativity and possess self-confidence, are resourceful, versatile, are willing to take risks and have the capacity for organisational ability, in a word Self Strength.

The picture for the Science student teachers would be that they are characterized by a high super-ego strength by being conscientious, determined, responsible, and emotionally disciplined. They are "planful, able to concentrate, interested in analyzing people, cautious in statement" (Cattell, Handbook, p.89). It is expected that such student teachers would exhibit favourable attitude towards teaching as measured by MTAI. They would work together with their pupils in a social atmosphere of cooperation rather than one of competition. They would not show dominative but integrative discipline. There would be mutual trust between the

student teachers and pupils. The student teachers, perhaps, have been encouraged by the teachers college faculty members not to think in terms of their status. The Science student teachers reject illusions, are self-reliant and not unwilling to take responsibilities. They do not expect attention and affection nor are they anxious about self. They are self-sufficient, willing to work alone rather than in groups. They also have no capacity or interest in writing poems, plays and other literary compositions. Perhaps, their education in Science has not equipped them with this type of artistry as lamented by Kirkman (1967). Perhaps, because of low loadings in variables 14 and 22 nothing can be said with confidence.

Factor B

Table 60.2

Factor B

Environmental Sensitivity Vs. Dominance

Variables	Description	Science Teachers	Science Students
4	Submissive Vs. Dominant (E)	-	.771
6	Expedient Vs. Conscientious (G)	-	-.325
8	Toughminded Vs. Tenderminded (I)	.446	-
11	Forthright Vs. Shrewd (N)	-	.318
16	Relaxed Vs. Tense (Q ₄)	-	-.621
17	Environmental Sensitivity	.887	-
18	Initiative	.476	-
20	Intellectuality	-.368	.567
22	Artistry	.330	-
23	Creativity	.435	-

Factor B for inservice Science teachers has a very high loading of .887 on variable 17 measuring Environmental Sensitivity, followed by a moderate loading of .476 on variable 18 measuring Initiative. On variable 8 measuring trait I (Toughminded Vs. Tenderminded) there is also a moderate loading of .446. On variables 23, 22 and 20 measuring Creativity, Artistry and Intellectuality there are moderate loadings of .435, .330 and -.368, respectively. This factor may be called Environmental Sensitivity.

Factor B for Science student teachers has a very high loading of .771 on variable 4 measuring trait E (Submissive Vs. Dominant), followed by a high negative loading of -.621 on variable 16 measuring Q_4 (Relaxed Vs. Tense). On variable 20 measuring Intellectuality there is an appreciably moderate loading of .567, followed by variable 11 measuring trait N (Forthright Vs. Shrewd) with a low loading of .318 and variable 6 measuring trait G (Expedient Vs. Conscientious) with a negative loading of -.325. This factor, as per definition provided by Cattell (Handbook, p.86), may be defined as one of Dominance.

The inservice Science teachers are open to the ideas of others, relate ideas to what can be seen, touched or heard and are interested in the beautiful aspects of experience. It is interesting to note that as Science teachers they are having a measure of initiative in producing new formulas and products. They are also tenderminded people who seek attention

and expect affection being not unoften anxious about themselves. But they do not lack creativity. They have an amount of capacity, however insignificant it may be, in producing plays, dramas, and other compositions. But surprisingly they lack intellectual curiosity. But as there are low loadings on variables 20 and 22 nothing can be said with certainty about the last two variables of Artistry and Intellectuality.

This would suggest a picture of assertion, unconventionality and competitiveness on the part of Science student teachers. "Occupationally," writes Cattell, (Handbook, p.86) "higher dominance scores are obtained by athletes, research scientists and lower scores are obtained by farmers, cooks and janitors." The Science student teachers of this investigation do not belong to the class of farmers, cooks or janitors! Perhaps, it is a normal expectation that such teachers with such a thrust should be free from id pressures and be relaxed and composed without undue frustrations or tensions. Their intellectuality is characterized by curiosity, enjoying challenging tasks, having a high degree of imagination and a total disregard for routine. They want to chalk their own paths. Little wonder that they are shrewd, smart and with a calculating mind. They are also expedient in that they disregard rules, etc. But because of the low loadings on trait N and G, nothing can be said with confidence.

Factor C

Table 60.3

Factor C

Conscientious Teaching Attitude Vs. Creative Environmental
Sensitivity

Variables	Description	Science Teachers	Science Students
6	Expedient Vs. Conscientious (G)	.789	-
17	Environmental Sensitivity	-	.780
21	Individuality	-.435	.517
22	Artistry	-.530	.664
23	Creativity	-	.562
24	MTAI	.717	-

Factor C for inservice Science teachers has a very high loading of .789 on variable 6 measuring trait G (Expedient Vs. Conscientious), followed by an equally high loading of .717 on variable 24 measuring attitude towards teaching (MTAI). On variables 21 and 22 measuring Individuality and Artistry there are negative moderate loadings of -.435 and -.530, respectively. This factor can, therefore, be called Conscientious Teaching Attitude.

Factor C for the Science student teachers has a very high loading of .780 on variable 17 measuring Environmental Sensitivity, followed by an appreciably high loading of .664 on variable 22 measuring Artistry, this is again followed by a moderate loadings of .562 and .517 on variables 23 and 21

measuring Creativity, and Individuality. All these variables are the different dimensions of creative potential as measured by SAM. Evidently, this is a factor of Creative Environmental Sensitivity.

The picture that would argue for the Science teachers is that they are conscientious, determined and responsible. They are dominated by a sense of duty to the profession and are equally concerned about moral standards and rules. Evidently, with these positive qualities their higher loading in variable 24 MTAI is as it should be. They would, enjoy teaching, the teachers and pupils would work together in the teaching learning process. Common goals and common understandings would characterize the teacher pupil relationship. Punishment and ridicule would be absent. It is, perhaps, no surprise that these inservice teachers are not interested in writing essays, poems and other literary pieces. They lack Artistry. Perhaps, their education in Science has not taught them this art. They are also moderately not prepared to work alone or work for long hours without getting tired.

The picture for the Science student teachers would be that they are environmentally sensitive in that they are open to the ideas of others, are interested in the beautiful and humorous aspects of experience and have a high degree of sensitivity to meaningful relations. Again, they are interested in producing objects, models stories, plays, poems and other literary pieces. It seems rather surprising that Science student teachers have indicated an interest in Artistry

because science specialists, by and large, do not have the type of Artistry indicated here (Kirkman, 1967). They have a modest amount of individuality and prefer to work alone rather than in groups, are critical of others and think for themselves. Besides, they have a modest amount of self-confidence and are willing to take risks (Creativity).

Factor D

Table 60.4

Factor D

Apprehensiveness Vs. Creative Initiative

Variables	Description	Science Teachers	Science Students
1	Reserved Vs. Outgoing (A)	-	.361
2	Less Intelligent Vs. More Intelligent (B)	.439	-.345
5	Sober Vs. Happy-Go-Lucky (F)	-	.772
11	Forthright Vs. Shrewd (N)	-	-.311
12	Placid Vs. Insecure	.854	-
18	Initiative	.646	.809

Factor D for the inservice Science teachers has a very high loading of .854 on variable 12 measuring trait O (Placid Vs. Insecure), followed by a high loading of .646 on variable 18 measuring Initiative. On variable 2 measuring trait B (Less Intelligent Vs. More Intelligent) there is a moderate loading of .439. Evidently this factor may be called one of

Apprehensiveness.

Factor D for the Science student teachers has a very high loading of .809 on variable 18 measuring Initiative, followed by a high loading of .772 on variable 5 measuring (Sober Vs. Happy-Go-Lucky). On variables 11, 2 and 1 measuring traits N (Forthright Vs. Shrewd), B (Less Intelligent Vs. More Intelligent), A (Reserved Vs. Outgoing), the loadings are uniformly low to the tune of -.311, -.345 and .361, respectively. This factor has been termed as Creative Initiative.

The Science teachers are apprehensive, feeling insecurity and therefore, characterized by anxiety. They feel depressed leading them to feel lonely. They not unoften feel over fatigued from exciting situations. But inspite of this they are prepared to take initiative in directing dramatics and musical compositions and are anxious to bring about organizational changes. Science, by and large, attracts people of higher intelligence and this is testified in the case of Science teachers also.

The picture suggested by the Science student teachers is one of robust creative initiative in directing and producing dramas and musical compositions and the production of new formulas or products. They are also eager to bring about changes in the organisational procedures when employed. Whether such an initiative would be allowed to operate is, to say the least, doubtful. They are enthusiastic, cheerful and frank, worldly astute, and insightful not only for themselves but for others also. They are reserved, cool, aloof and prepared to

stand by their own ideas. But they are not intellectually bright. This intellectuality is, obviously, convergent. Be that as it may, the loadings on variables 1, 2 and 11 are low and nothing can be said definitely.

Factor E

Table 60.5

Factor E

Venturesomeness Vs. Creative Self-Strength

Variables	Description	Science Teachers	Science Students
1	Reserved Vs. Outgoing (A)	-.666	.421
7	Shy Vs. Venturesome (H)	.724	-
16	Relaxed Vs. Tense (Q ₄)	-.671	-
19	Self Strength	-	.824
20	Intellectuality	-	.470
23	Creativity	-	.671
24	MTAI	.312	-

Factor E for the inservice Science teachers has a very high loading of .724 on variable 7 measuring trait H (Shy Vs. Adventurous), followed by two negative loadings of -.671 and -.666 on variables 16 and 1 measuring Q₄ (Relaxed Vs. Tense) and A (Reserved Vs. Outgoing). On variable 24 measuring attitude towards teaching there is rather a low loading of .312. This factor may be termed as Venturesomeness.

Factor E for the Science student teachers has a very high loading of .824 on variable 19 measuring Creative Self-strength, followed by an appreciably high loading of .671 on variable 23 measuring Creativity. On variable 20 measuring Intellectuality there is a pretty moderate loading of .470, followed by variable 1 measuring trait A (Reserved Vs.Outgoing) where the loading is .421. This factor is evidently one of Creative Self-Strength.

The Science teachers are adventurous, friendly, and socially bold. They do not suffer from an unreasonable sense of inferiority. They are likely to show "little inhibition in environmental [^]treat" (Cattell, Handbook, p.92). Understandably, they have a low ergic tension, are relaxed and composed. They are not assailed by anxiety as is the case with high Q₄ people. But they are reserved, a trait in common with researchers as investigated by Cattell (1955). The low loading on MTAI does not enable one to say anything with certainty.

This would mean that the Science student teachers have self-strength and possess self-confidence, are resourceful, versatile, and willing to take risks with a desire to excel in organisational abilities. But they have, besides, an attitude of openness to the ideas of others, and have sensitivity to meaningful relations. They have an amount of initiative and intellectual curiosity, and enjoy challenging tasks. They are ready to work for longer hours without getting tired. Their work is their leisure. They do not write essays, poems, etc. Besides, they are outgoing, warmhearted and good natured. They

enjoy social recognition and are not cool, aloof but attentive to people.

Factor F

Table 60.6
Factor F
Self Discipline Vs. Stability

Vari- ables	Description	Science Teachers	Science Students
2	Less Intelligent Vs. More Intelligent (B)	.449	.337
3	Less Stable Vs. More Stable (C)	-	.880
8	Toughminded Vs. Tenderminded (I)	-.300	-
15	Uncontrolled Vs. Controlled (Q_3)	.889	-
16	Relaxed Vs. Tense (Q_4)	-	-.374
19	Self Strength	.343	-
21	Individuality	-	.473

This factor for inservice Science teachers has a very high loading of .889 on variable 15 measuring trait Q_3 (Uncontrolled Vs. Controlled), followed by loadings of .449 and .343 on variables 2 and 19 measuring traits B (Less Intelligent Vs. More Intelligent) and Self-strength, respectively. On variable 8 measuring trait I (Toughminded Vs. Tenderminded) there is a low negative loading of -.300. This factor has been designated as Self-discipline.

Factor F for the Science student teachers has a very high loading of .880 on variable 3 measuring trait C (Less Stable Vs. More Stable), followed by a moderate loading of .473 on variable 21 measuring Individuality. On variable 2 measuring trait B (Less Intelligent Vs. More Intelligent) there is a low loading of .337, followed by a negative low loading of -.374 on variable 16 measuring trait Q₄ (Relaxed Vs. Tense). This factor has been designated as one of Stability.

The inservice Science teachers, as expected, possess a high degree of self-sentiment and are self-controlled following their self-images. They are free of anxiety with a strong will power. Again, as expected they are more intelligent (B+). They possess self-confidence, and are willing to take risks. That they are unsentimental, self-reliant and aesthetically insensitive cannot be commented upon with an amount of confidence because of the low loadings.

The picture for the Science student teachers would be that these youngmen are stable, unruffled and emotionally mature. They are not easily annoyed by things and people and are satisfied with the world situations, family and the restrictions of life. In short, they do not feel unable to cope with life and its problems. They would like to be alone, are critical of others and think for themselves. They are, by and large, relaxed, calm and composed. They are not prone to anxieties. They are intelligent to some extent but the low loadings in variable 2 and 16 do not enable one to say anything with confidence.

Factor G

Table 60.7
Factor G
Suspiciousness Vs. Venturesomeness

Vari- ables	Description	Science Teachers	Science Students
3	Less Stable Vs. More Stable (C)	-.410	-
7	Shy Vs. Adventurous (H)	-	.830
9	Trusting Vs. Suspicious (L)	.827	.343
10	Practical Vs. Imaginative (M)	-	.725
16	Relaxed Vs. Tense (Q ₄)	-.408	-
21	Individuality	.326	-

Factor G for inservice Science teachers has a very high loading of .827 on variable 9 measuring trait L (Trusting Vs. Suspicious), followed by a low loading of .326 on variable 21: Individuality. On variables 3 and 16 measuring trait C (Less Stable Vs. More Stable) and Q₄ (Relaxed Vs. Tense) there are moderate negative loadings of -.410 and -.408. Evidently this factor may be characterised as Suspiciousness.

This factor for the Science student teachers has a high loading of .830 on variable 7 measuring trait H (Shy Vs. Adventurous); followed by a high loading of .725 on variable 10 measuring trait M (Practical Vs. Imaginative). On variable 9 measuring trait L (Trusting Vs. Suspicious) there is a low loading of .343. Evidently this is a factor of Venturesomeness.

It would mean surprisingly that Science teachers are suspicious, jealous, dogmatic and irritable. They dwell on frustrations and are suspicious of interference. They have protension signifying, "projection and inner tension" (Cattell, Handbook, p.96). It is again, surprising that such suspicious teachers should have low ergic tensions - relaxed and composed. It is, ofcourse, understandable, that these Science teachers are emotionally less stable being dominated as they are, by suspiciousness. They also have moderately low individuality and would like to work alone rather than in groups.

The Science student teachers are venturesome, socially bold and are not shy or tormented by an unreasonable sense of inferiority. They show little inhibitions by environmental threats. This trait would be an asset to the would-be Science student teachers in that "presumably, this factor is a very important one in distinguishing suitability for those occupations demanding ability to face wear-and-tear in dealing with people and grueling emotional situations" (Cattell, Handbook, p.92). Teaching is an occupation that needs a sort of resilience to withstand hardships and hopefully these student teachers are well-equipped to face "grueling emotional situations" in a class of 60-70 pupils from diverse socio-economic backgrounds. Besides they are not rule bound but unconventional and absorbed in ideas and the like. This factor is a marked trait of creative minds. But they are suspicious and not ready to forget frustrations readily. But in view of the low loading on this trait (L) nothing can be said with confidence.

Factor H

Table 60.8

Factor H

Self-Sufficiency Vs. Self-Discipline

Vari- ables	Description	Science Teachers	Science Students
2	Less Intelligent Vs. More Intelligent (B)	-.342	-
4	Submissive Vs. Dominant (E)	.537	-
11	Forthright Vs. Shrewd (N)	.726	-.595
14	Group Dependent Vs. Self Sufficient (Q_2)	.798	-
15	Uncontrolled Vs. Controlled (Q_3)	-	.790
21	Individuality	.415	-

Factor H for the inservice Science teachers has a very high loading of .798 on variable 14 measuring trait Q_2 (Group Dependent Vs. Self-sufficient), followed by a very high loading of .726 on variable 11 measuring trait N (Forthright Vs. Shrewd). On variables 4 and 21 measuring trait E (Submissive Vs. Dominant) and Individuality there is a moderate loading of .537 and .415, respectively. On variable 2 measuring trait B (Less Intelligent Vs. More Intelligent) there is a low negative loading of -.342. This factor may be designated as one of Self-Sufficiency.

Factor H for the Science student teachers has an appreciably high loading of .790 on variable 15 measuring trait Q_3 (Uncontrolled Vs. Controlled), followed by a negative

loading of $-.595$ on variable 11 measuring trait N (Forthright Vs. Shrewd). Obviously, this is a factor of Self-Discipline.

The picture for the Science teachers would be that they are self-sufficient, resourceful and prefer their own decisions. In group dynamics they are significantly dissatisfied with group integration. This is a factor associated with introversion. They are, besides, shrewd, astute and ambitious also but feel occasionally insecure. As warranted by an appreciably moderate loading on variable 4 they are assertive, and as self-sufficient persons they are independent-minded too. They have an individuality of their own and prefer to work alone, are critical of others and think for themselves. Whether these people are less intelligent as warranted by the low negative loading in variable 2 cannot be answered with certainty.

The suggested picture for Science student teachers would be that they possess a high degree of self-sentiment, are controlled, with an exacting will power, trying always to follow their self-images. According to Cattell (Handbook, p.107) Q_3+ is negatively loaded with anxiety - Second order factor QII. Interestingly, "high Q_3 is associated", as observed by Cattell, "with success in mechanical, mathematical and organisational activities." And it is as it should be. They are forthright, unpretensions, spontaneous - in a word down-to-earth.

Contd.

Factor I

Table 60.9
Factor I
Surgency Vs. Radicalism

Vari- ables	Description	Science Teachers	Science Students
2	Less Intelligent Vs. More Intelligent (B)	-	.434
3	Less Stable Vs. More Stable (C)	.512	-
5	Sober Vs. Happy-go-Lucky (F)	.828	-
8	Toughminded Vs. Tenderminded (I)	-	.357
13	Conservative Vs. Experimenting(Q ₁)	-	.814
14	Group Dependent Vs. Self- Sufficient (Q ₂)	-	.530
21	Individuality	.460	-.308

Factor I for the inservice Science teachers has a very high loading of .828 on variable 5 measuring trait F (Sober Vs. Happy-Go-Lucky), followed by a moderate loading of .512 on variable 3 measuring trait C (Less Stable Vs. More Stable). On variable 21 Individuality has a moderate loading of .460. Evidently it is a factor of Surgency.

Factor I for the Science student teachers has a very high loading of .814 on variable 13 measuring trait Q₁ (Conservatism Vs. Experimenting), followed by a moderate loadings of .530 and .434 on variables 14 measuring trait Q₂ (Group Dependent Vs. Self-Sufficient) and variable 2 measuring trait B (Less

Intelligent Vs. More Intelligent). On variable 8 measuring trait I (Toughminded Vs. Tenderminded) there is a low loading of .357, followed again by a low negative loading of -.308 on variable 21 measuring Individuality. This factor, evidently, is one of Radicalism.

It would mean that inservice teachers are enthusiastic, frank, quick and alert. They have had an "easier, less punishing, more optimism - creating environment" (Cattell, Handbook, p.87). They are stable, face reality calmly and do not allow their emotions to over rule them. They are not easily annoyed by things and people nor are they dissatisfied with the world situations or their families. It is not, therefore, surprising that they have a creative individuality. They prefer to work alone rather than in groups, are self-starters and critical of others.

The Science student teachers are radical, freethinking and experimenting, interested in breaking the crust of custom and tradition. They contribute more remarks to discussion, a high percentage being of critical nature, Cattell (Handbook, p.105). That they are, as Science student teachers, interested to experiment with problem solutions and less inclined to moralise, is not surprising. But it is not surprising also that once they enter their "second training" in their schools as regular teachers this unique characteristic would not be allowed to grow but nipped in the bud. These Science student teachers are self-sufficient, resourceful and prefer their own decisions. They are likely to be introverts as "Q₂ is a central

primary in the invia (introversion) - second order factor" (Cattell, Handbook, p.105). Obviously they are more intelligent characterized by intellectual adaptability. They are tender-minded and lack individuality in that they do not want to work alone and think for themselves. But the low loadings on variables 8 and 21 do not encourage one to say anything with definiteness regarding the importance to be attached to them.

Factor J

Table 60.10

Factor J

Experimentation Vs. Insecurity

Vari- ables	Description	Science Teachers	Science Students
1	Reserved Vs. Outgoing (A)	-	.348
3	Less Stable Vs. More Stable (C)	.379	-
9	Trusting Vs. Suspiciousness (L)	-	.475
12	Placid Vs. Insecure (O)	-	.840
13	Conservative Vs. Experimenting(Q ₁)	.843	-
22	Artistry	-.364	-

Factor J has a very high loading of .843 on variable 13 measuring trait Q₁ (Conservative Vs. Experimental) for the inservice Science teachers, followed by an low loading of .379 on variable 3 measuring trait C (Less Stable Vs. More Stable). On variable 22 measuring Artistry there is a negative loading of -.364. This factor can be termed as Experimentation.

Factor J for Science student teachers has a very high loading of .840 on variable 12 measuring trait O (Placid Vs. Insecure), followed by a moderate loading of .475 on variable 9 measuring trait F (Trusting Vs. Suspicious). On variable 1 measuring trait A (Reserved Vs. Outgoing) there is a low loading of .348. This factor may be termed as one of Insecurity.

Evidently it is of interest to note that the Science teachers are interested in experimentation and have a liberal, analytical and free thinking attitude. There is evidence that "Q₁+ persons are more well-informed, more inclined to experiment with problem solution, less inclined to moralise, less unquestioning about views generally" (Cattell, Handbook, p.104). They are emotionally mature, stable and calm. But they lack Artistry, in that they cannot, perhaps, write essays, poems and other literary compositions. Perhaps their education has not equipped them to do so (Kirkman, 1967).

The picture for the Science student teachers would be that they are insecure, worrying and anxious. They occasionally brood and feel lonely. "Clinically," writes Cattell (Handbook, p.102), "O is very important, first one of the largest factors in anxiety." Being anxiety ridden they experience some sort of maladjustment. Besides, they have a moderate amount of inner tension making them suspicious and irritable. They dwell on their own frustrations. They are outgoing and warmhearted, a fact which cannot be testified with an amount of confidence in view of the low loading on variable 1.

Factor K

Table 60.11
Factor K
Unconventionality

Vari- ables	Description	Science Teachers	Science Students
8	Toughminded Vs. Tenderminded (I)	-.401	-
10	Practical Vs. Imaginative (M)	.876	-

Factor K for inservice Science teachers has a very high loading of .876 on variable 10 measuring trait M (Practical Vs. Imaginative), followed by an appreciable negative loading of -.401 on variable 8 measuring trait I (Toughminded Vs. Tenderminded). This factor has emerged in the inservice Science teachers only. It have been evidently called Unconventionality.

The suggestive picture for inservice Science teachers is that they are unconventional, imaginative and absorbed in ideas. Cattell and Drevdahl (1955) and Drevdahl (1956) have found this trait to distinguish at 1 percent level of significance creative researchers and artists from administrators and teachers. The findings of this study may be taken as suggestive howsoever significant the loadings here. The sample Science teachers are unconventional, self-reliant and act on practical logical evidence.

SECTION E

FACTOR CLUSTER OF VARIABLES IN INSERVICE ARTS
TEACHERS AND ARTS STUDENT TEACHERS

Identification of Factors

The factors which have been identified on the basis of factor analysis for inservice Arts teachers and Arts student teachers are listed below :

<u>Factor</u>	<u>Inservice Arts Teachers</u>		<u>Arts Student Teachers</u>
A	Emotionally Instable Creativity	Vs.	Creative Initiative
B	Protension Teaching Attitude	Vs.	Self-Discipline
C	Sophisticated Submissiveness	Vs.	Radical Shrewdness
D	Initiativelessness	Vs.	Self-sufficiency
E	Creative Intellectuality	Vs.	Surgency
F	Apprehensiveness	Vs.	Suspiciousness
G	Artistic Insensitivity	Vs.	Conscientiousness
H	Aesthetic Sensitivity		Aesthetic Sensitivity
I	Venturesomeness	Vs.	Insecurity
J	Tension	Vs.	Creative Intellectuality
K	---		Creative Artistry

Factor A

Table 61.1

Factor A

Emotionally Instable Creativity Vs. Creative Initiative

Variables	Description	Arts Teachers	Arts Students
2	Less Intelligent Vs. More Intelligent (B)	-.358	-
3	Less Stable Vs. More Stable (C)	-.741	-
14	Group Dependent Vs. Self Sufficient (Q ₂)	-.370	-
17	Environmental Sensitivity	.359	.403
18	Initiative	-	.875
19	Self-Strength	.552	.421
23	Creativity	.736	.781
24	MTAI	-	.454

Factor A for inservice Arts teachers has a very high negative loading of -.741 on variable 3 measuring trait C (Less Stable Vs. More Stable), followed by an equally very high positive loading of .736 on variable 23 measuring Creativity. On variable 19 measuring Self-strength there is a rather high loading of .552, followed by variable 17 with a loading of .359 measuring Environmental Sensitivity. On variable 2 measuring trait B (Less Intelligent Vs. More Intelligent) and variable 14 measuring trait Q₂ (Group Dependent Vs. Self-sufficient) there are negative loadings of -.358

and $-.370$, respectively. This factor, therefore, may be termed as Emotionally Instable Creativity.

For the Arts student teachers Factor A has a very high loadings of $.875$ on variable 18 measuring Initiative followed by an equally very high loading of $.781$ on variable 23 measuring Creativity. On variable 24 measuring attitude towards teaching (MTAI) the loading is appreciably moderate $.454$. On variable 19 measuring Self-strength the loading is $.421$, followed by a moderate loading of $.403$ on variable 17 measuring Environmental Sensitivity. Since there are high loadings in variables 18 and 23 the factor for this group has been defined as Creative Initiative.

The Arts inservice teachers are emotionally instable as indicated by a very high negative loading of trait C. They get emotional when frustrated, are, perhaps, easily perturbed when things don't work according to their expectations and worry occasionally. They are creative also in that they have the second highest loading on variable 23. The creative workers seem to regress though temporarily when they face insolvable problems. In fact, Cattell (1955) found "at or beyond 1 percent level of certainty he (researcher) shows more emotional instability (C-)."

The picture for the Arts teachers would be one of distinct initiative with their willingness to direct, produce and/or play lead roles in dramatics, produce new products and try to bring about changes in organisational procedures. Besides, they have a major amount of individuality, environ-

mental sensitivity, intellectuality and artistry as is evidenced by a high loading on variable 23 which is a measure of Creativity. They have self-strength in that they possess self-confidence, are willing to take risks and are resourceful and versatile. Not surprisingly, perhaps, they have demonstrated a favourable teaching attitude (MTAI) also. The Arts student teachers, it is expected, would demonstrate creative teaching attitude in their classrooms.

Factor B

Table 61.2

Factor B

Protension Teaching Attitude Vs. Self-Discipline

Variables	Description	Arts Teachers	Arts Students
2	Less Intelligent Vs. More Intelligent (B)	.390	-
7	Shy Vs. Adventurous (H)	-	.649
9	Trusting Vs. Suspicious (L)	.824	-
13	Conservative Vs. Experimenting(Q ₁)	-.333	-
15	Uncontrolled Vs. Controlled (Q ₃)	-	.801
17	Environmental Sensitivity	.422	-
21	Individuality	-	.572
22	Artistry	-.324	-
24	MTAI	.644	-

Factor B for the inservice Arts teachers has a very high loading of .824 on variable 9 measuring trait L (Trusting Vs. Suspicious), followed by a high loading of .644 on variable 24 measuring attitude towards teaching (MTAI). On variable 17 measuring Environmental Sensitivity the loading is rather moderate .422. On variable 2 measuring trait B (Less Intelligent Vs. More Intelligent) the loading is low .390, followed again by two negative loadings of -.333 and -.324 on variables 13 and 22, measuring trait Q₁ (Conservative Vs. Experimental) and Artistry. This factor may be called as Protension Teaching Attitude.

This factor for the Arts student teachers has a very high loading of .801 on variable 15 measuring trait Q₃ (Controlled Vs. Uncontrolled), followed by a high loading of .649 on variable 7 measuring trait H (Shy Vs. Adventurous). On variable 21 measuring Individuality there is a marked moderate loading of .572. This factor may be defined as Self-Discipline.

The inservice Arts teachers have protension in that they are suspicious and jealous. The term protension, according to Cattell (Handbook, p.96) signifies "projection of inner tension." This trait L+, in the 16 PF is associated with QII (measuring second stratum factor measurable by 16 PF) Anxiety. Now it stands to reason as to how such teachers with anxiety, suspicion and irritability could demonstrate a very favourable attitude towards teaching as indicated by a high loading of .644 on variable 24 (MTAI). It is difficult to

speculate and a reasonable explanation is hard to come by. Could it be, perhaps, due to the fakability of MTAI. It needs further investigation to explain the apparent contradiction. The Arts teachers are moderately sensitive by being open to the ideas of others and have also sensitivity to meaningful relations. The negative very low loadings on variable 22 (Artistry), variable 13 indicating conservatism and variable 2 (Less Intelligent) cannot be trusted too strongly in explaining the phenomenon rather conclusively.

The picture for the Arts student teachers is one of self-discipline, controlled, exacting will power. They want to follow their own self-images. "Such persons," writes Cattell (Handbook, p.106)" exhibit self-control, persistence, foresight, considerateness of others and conscientiousness." Q_3 is a significant factor in QVIII - high super-ego - measured by second order factors measurable by 16 PF. The Arts student teachers are adventurous, friendly and socially bold without any "unreasonable sense of inferiority." Such teachers show a sort of resilience that is needed to absorb "psychological shocks" (Start, 1966) in teaching a class of 50-60 or more students in the schools. They are also moderately, of course, individuals in that they are critical of others and are prepared to work for long hours without getting tired. Their work is their leisure.

Factor C

Table 61.3

Factor C

Sophisticated Submission Vs. Radical Shrewdness

Vari- ables	Description	Arts Teachers	Arts Students
4	Submissive Vs. Dominant (E)	-.774	-
11	Forthright Vs. Shrewd (N)	.845	.653
13	Conservative Vs. Experimenting (Q ₁)	-	.808
15	Uncontrolled Vs. Controlled (Q ₃)	.401	-
17	Environmental Sensitivity	.331	-
19	Self Strength	-	-.405
21	Individuality	-	.436

Factor C for the inservice Arts teachers has a very high loading of .845 on variable 11 measuring trait N (Forthright Vs. Shrewd), followed by an equally very high loading of -.744 on variable 4 measuring trait E (Submissive Vs. Dominant). While variable 15 measuring trait Q₃ (Uncontrolled Vs. Controlled) has a very moderate loading of .401, variable 17 measuring Environmental Sensitivity has a low loading of .331 only. Keeping in view the positive and negative loading on variables 11 and 4 this factor can evidently be called Sophisticated Submissiveness.

Factor C for the Arts student teachers has an appreciably very high loading of .808 on variable 13 measuring trait Q₁

(Conservative Vs. Experimental), followed by a pretty high loading of .653 on variable 11 measuring trait N (Forthright Vs. Shrewd). On variable 21 and 19 measuring Individuality and Self-strength the respective moderate loadings are to tune of .436 and -.405. Taking into consideration the loadings on variables 13 and 11 this factor has been named as Radical Shrewdness.

The Arts inservice teachers are sophisticated, polished socially, and worldly astute. Though ambitious they are insecure. This makes them submissive, humble and diplomatic. They know following conventions and obeying rules and regulations will help them materially under the present social organisation. Assertion is not in their nature. Perhaps, it is a characteristic of Arts teacher stereotype. These characteristics gain support in Q_3+ which is defined by social precision. They are, besides, open to the ideas of others and are sensitive to meaningful relations in the environment.

For the Arts student teachers the picture that emerges is that they have radical sophistication, are experimental, liberal and free-thinking. They are interested "in breaking the crust of custom and tradition and in leading and persuading people... in group dynamics they contribute significantly more remarks to group discussions, a percentage being of critical nature" (Cattell, Handbook, pp. 104-105). They seem, as judged by the second order factor (Cattell, p. 49), to have an independent frame of mind. These characteristics, understandably, do not suggest an Arts syndrome but one has to keep in

mind that the sample Arts student teachers are in their twenties and living in a world of change and flux, stress and strain. They cannot be expected as novices to have developed the angularities of their specialization as painted by the popular mind. They are also shrewd, worldly astute, and insightful not only about their own selves but others too. It is not, therefore, surprising that in the creativity dimension they are critical of others and do think independently. But with all this they have not the self-strength to take risks or have a desire to excel in organisational abilities.

Factor D

Table 61.4

Factor D

Initiativelessness Vs. Self-Sufficiency

Variables	Description	Arts Teachers	Arts Students
1	Reserved Vs. Outgoing (A)	.612	-
3	Less Stable Vs. More Stable (C)	-	.325
4	Submissive Vs. Dominant (E)	-	-.313
5	Sober Vs. Happy-Go-Lucky (F)	.619	-
6	Expedient Vs. Conscientious (G)	.328	-
7	Shy Vs. Venturesome (H)	-	.325
10	Practical Vs. Imaginative (M)	-	-.478
14	Group Dependent Vs. Self Sufficient (Q ₂)	-	.820
18	Initiative	-.780	-
19	Self Strength	-	-.435

For the Arts inservice teachers this factor has a very high negative loading of $-.780$ on variable 18 measuring Initiative. On variables 5 and 1 measuring traits F (Sober Vs. Happy-go-Lucky) and A (Reserved Vs. Outgoing) there are high loadings of $.619$ and $.612$. On variable 6 measuring trait G (Expedient Vs. Conscientious) there is a low loading of $.328$. This factor may be termed Initiativelessness.

This factor for the Arts student teachers has a very high loading of $.820$ on variables 14 measuring trait Q_2 (Group Dependent Vs. Self-Sufficient), followed by a low loading of $.325$ and $.325$ on variables 3 measuring trait C (Less Stable Vs. More Stable) and ^{Variable 7} measuring trait H (Shy Vs. Adventurous). On variable 10 measuring trait M (Practical Vs. Imaginative) there is a pretty moderate negative loading of $-.478$, followed by a moderate loading of $-.435$ on variable 19 measuring Self-strength. This is again followed by a low negative loading of $-.313$ on variable 4 measuring trait E (Submission Vs. Dominance). This factor has been characterized as Self-sufficiency.

The picture for the Arts teachers is that they are predominantly lacking in initiative in directing, producing dramatics and musical productions or producing formulas or products and also bringing about changes in organisational procedures. They are without "exacting aspirations," and happy-go-lucky, always cheerful. If they are outgoing, warm-hearted and easy-going it is as it should be. Nothing can be said confidently regarding their conscientiousness as variable 6 has a low loading.

The picture for the Arts student teachers is one of self-sufficiency, resourcefulness and preference for their own ideas. They are alert to the practical needs and guided by objective realities. Though occasionally worried they are steady. But it is to be noted that they lack self-strength and have no self-confidence. They are not willing to take risks or have a desire to excel in organisational abilities. It seems rather odd that people who are primarily characterized by self-sufficiency and resourcefulness should lack self-confidence and self-strength. It is difficult to speculate. Perhaps, their self-sufficiency seems to be theoretical and academic and not practical. Judged by the low loadings on traits C (Stability), E (Submission) and H (Adventurousness) much cannot be taken for granted.

Factor E

Table 61.5

Factor E

Intellectuality Vs. Surgency

Vari- ables	Description	Arts Teachers	Arts Students
2	Less Intelligent Vs. More Intelligent (B)	.480	-
5	Sober Vs. Happy-Go-Lucky (F)	-	.841
16	Relaxed Vs. Tense (Q ₄)	-	-.535
19	Self Strength	-.407	.444
20	Intellectuality	.877	-

For inservice Arts teachers in this factor it is the creativity dimension Intellectuality that has yielded a very high loading of .877, followed by an appreciable moderate loading of .480 on variable 2 measuring trait B (Less Intelligent Vs. More Intelligent). On variable 19 measuring Self-strength there is a moderate though negative loading of -.407. Evidently this is a factor of Creative Intellectuality.

For the Arts student teachers this factor has a very high loading of .841 on variable 5 measuring trait F (Sober Vs. Happy-Go-Lucky), followed by a moderate loading of .444 on variable 19 measuring Self-strength. On variable 16 measuring trait Q₄ (Relaxed Vs. Tense) there is a pretty negative loading of -.535. This factor has been termed as one of Surgency.

The Arts teachers surprisingly, perhaps, have demonstrated a high level of intellectuality. They have intellectual curiosity, enjoy challenging tasks and have preference for adventure over routine. They have a dislike for doing things in a prescribed way. They are moderately intelligent also but lack self-strength in that they have little confidence in matching talents against others, are not resourceful and willing to take risks. They do not possess nor seem to have a desire to excel in organizational ability adequately.

The Arts student teachers are happy-go-lucky, talkative and cheerful. Perhaps, "they have had," as Cattell (Handbook, p.87) writes, "an easier, less punishing, more optimism creating environment... (and are with) less exacting aspirations."

They have self-strength and self-confidence, are resourceful and willing to take risks. They have organisational abilities as well. It is no surprise that they are without any id pressures but are calm, relaxed and composed. Anxiety does not face them. Perhaps, as happy-go-lucky people they can face the situation calmly.

Factor F

Table 61.6

Factor F

Apprehensiveness Vs. Suspiciousness

Variables	Description	Arts Teachers	Arts Students
1	Reserved Vs. Outgoing (A)	-	.718
9	Trusting Vs. Suspicious (L)	-	.831
10	Practical Vs. Imaginative (M)	.469	-
12	Placid Vs. Insecure (O)	.831	-
13	Conservative Vs. Experimenting (Q ₁)	-.560	-
16	Relaxed Vs. Tense (Q ₄)	-	-.374

Factor F for the Arts teachers has a very high loading of .831 on variable 12 measuring trait O (Placid Vs. Insecure) followed by a significant moderate loading of .469 on variable 10 measuring trait M (Practical Vs. Imaginative). On variable 13 measuring trait Q₁ (Conservative Vs. Experimenting) there is a rather high negative loading of -.560. Evidently this is a factor of Apprehensiveness.

Factor F for Arts student teachers has a very high loading of .831 on variable 9 measuring trait L (Trusting Vs. Suspicious), followed by a very high loading of .718 on variable 1 measuring trait A (Reserved Vs. Outgoing). On variable 16 measuring trait Q₄ (Relaxed Vs. Tense) there is a low negative loading of -.374. Evidently it is a factor of Suspiciousness.

The Arts inservice teachers are apprehensive, insecure and anxious. "Clinically," writes Cattell (Handbook, p.102), "O is very important first as one of the largest factors in Anxiety." They feel lonely and brood not infrequently. For such persons it is, perhaps, a normal expectation to be conservative, respecting established ideas and tolerant of traditions and customs. They are not interested in Science, as suggested by Cattell (Handbook, p.104). But again as expected, they are absorbed in ideas, interested in art "imaginatively enthralled by Inner Creations," and occasionally absent-minded.

The Arts student teachers are suspicious with protension, which according to Cattell (Handbook, p.96) signifies, "projection and inner tension." They are jealous and dwell on their frustrations. They would like other people to accept responsibility over errors. But it is rather difficult to reconcile how suspicious people could be warm-hearted and easy-going. The point can not be dismissed lightly in view of the very high loading in the trait under reference, viz. A (positive pole). It is difficult to speculate and a ready explanation is

difficult to come by. Could it be, perhaps, that they try to cover their psychological inadequacies and resort to some sort of defence mechanism by adopting an attitude of warm-heartedness. One cannot be positive about it. Again, how could suspicious youngmen with their inner tensions feel relaxed, calm and unfrustrated - without id tensions? It seems, perhaps - it is a wild hunch - that their ratings in trait A and Q₄ are a facade. Further research on larger samples is needed.

Factor G

Table 61.7

Factor G.

Artistic Insensitivity Vs. Conscientiousness

Vari- ables	Description	Arts Teachers	Arts Students
2	Less Intelligent Vs. More Intelligent (B)	-	.403
3	Less Stable Vs. More Stable (C)	-	.595
6	Expedient Vs. Conscientious (G)	.538	.773
17	Environmental Sensitivity	-.637	-
19	Self-strength	.352	-
22	Artistry	-.755	-

Factor G for the Arts inservice teachers has a very high negative loading of $-.755$ on variable 22 measuring Artistry. On variable 17 measuring Environmental Sensitivity there is also a high negative loading of $-.637$. There is an

appreciable moderate loading of .538 on variable 6 measuring trait G (Expedient Vs. Conscientious), followed by a rather low loading of .352 on variable 19 measuring Self-strength. This factor may be characterized as Artistic Insensitivity.

This factor for the Arts student teachers has a very high loading of .773 on variable 6 measuring trait G (Expedient Vs. Conscientious), followed by a high loading of .595 on variable 3 measuring trait C (Less Stable Vs. More Stable). On variable 2 measuring trait B (Less Intelligent Vs. More Intelligent) there is a moderate loading of .403. This factor, obviously, is one of Conscientiousness.

The inservice Arts teachers, very surprisingly, lack artistry for which their education has prepared them during all the years in University. They are not only incapable of producing paintings and carvings but also lack the talent in producing stories, plays, poems and other literary compositions. They are also environmentally insensitive, are not interested in the beautiful and humorous aspects of experience and are insensitive to meaningful relations. They also disregard rules and obligations to other people. In a word they are expedient. They possess self-confidence and a desire to excel in organisational abilities. But in view of the low loading on this variable nothing can be said with definiteness.

The Arts student teachers are conscientious, determined, emotionally disciplined and dominated by a sense of duty. They are concerned about moral standards and rules. This trait represents "persistence, freedom from oscillation and good

organisation of thinking, (Cattell, Handbook, p.89). They are emotionally stable also and are not unduly ruffled or worried. They do not evade responsibilities nor tend to give up things when faced with difficulties. They have a moderate amount of intellectual adaptability. All these characteristics are a rare combination in the personality configuration of teachers.

Factor H

Table 61.8

Factor H

Aesthetic Sensitivity

Vari- ables	Description	Arts Teachers	Arts Students
3	Less Stable Vs. More Stable (C)	-	.310
4	Submissive Vs. Dominant (E)	-	.563
5	Sober Vs. Happy-Go-Lucky (F)	.341	-
8	Toughminded Vs. Tenderminded (I)	.825	.837
10	Practical Vs. Conservative (M)	.333	-
15	Uncontrolled Vs. Controlled (Q ₃)	-.461	-
19	Self Strength	-.305	-
21	Individuality	-	-.352

Factor H for the inservice Arts teachers has a very high loading of .825 on variable 8 measuring trait I (Toughminded Vs. Tenderminded), followed by a moderate loading of .341 on variable 5 measuring trait F (Sober Vs. Happy-Go-Lucky). On variable 10 there is a low loading of .333 and it measures trait M

(Practical Vs. Imaginative). On variables 15 and 19 there are negative loadings of $-.461$ and $-.305$. They measure trait Q_3 (Uncontrolled Vs. Controlled) and Self-strength, respectively. This factor has been termed as Aesthetic Sensitivity.

Factor H for the Arts student teachers has a very high loading of $.837$ on variable 8 measuring trait I (Toughminded Vs. Tenderminded), followed by a high loading of $.563$ on variable 4 measuring trait E (Submissive Vs. Dominance). While on variable 3 measuring trait C (Less Stable Vs. More Stable) there is a positive loading of $.310$, on variable 21 measuring Individuality, there is a negative loading of $-.352$. Evidently this is a factor of Aesthetic Sensitivity.

The picture for the inservice Arts teachers would be that they are sensitive persons, imaginative in Inner Life and act on Sensitive Intuition. They expect affection and seek help and sympathy. They are uncontrolled in that they want to follow their own urges and are careless of social rules. They express their views frankly. On the basis of variables 10 and 19 they are imaginative and absorbed in ideas. But they lack Self-confidence and are unwilling to take risks. But the low loadings here do not lead one to say anything with confidence.

The Arts student teachers are also in the possession of artistic interests and are sensitive. They have an imaginative and an aesthetic mind with a love for dramatics. According to Cattell (Handbook, p.94) trait I+ is a major primary component of QIII (Second-stratum factor) which indicates

Pathemia and such individuals (pathemic) "show a tendency to feel rather than to think" (p. 119). They are also fairly dominant, assertive and independent minded. They raise group problems and criticise group defects. Perhaps, high I and E might be significant factor of artistic creativity. To some extent they are stable and calm lacking in individuality. But low loadings on variables 3 and 21 do not enable one to say anything definitely.

Factor I

Table 61.9
Factor I
Venturesomeness Vs. Insecurity

Variables	Description	Arts Teachers	Arts Students
2	Less Intelligent Vs. More Intelligent (B)	-	.321
6	Expedient Vs. Conscientious (G)	-.300	-
7	Shy Vs. Adventurous (H)	.754	-
10	Practical Vs. Imaginative (M)	-.454	-
12	Placid Vs. Insecure (O)	-	.764
17	Environmental Sensitivity	-	.529
21	Individuality	.655	-
23	Creativity	.321	-
24	MTAI	.338	-.609

Factor I for the Arts teachers has a very high loading of .754 on variable 7 measuring trait H (Shy Vs. Venturesome), followed by a high loading of .655 on variable 21 measuring Individuality. On variables 24 measuring attitude towards teaching (MTAI), 23 measuring Creativity, and 6 measuring trait G (Expedient Vs. Conscientious) there are uniformly low loading of .338, .321 and -.300, respectively. On variable 10 measuring trait M (Practical Vs. Imaginative) there is a moderate loading of -.454. This factor has been characterized as Venturesomeness.

For the Arts student teachers factor I has a pretty high loading of .764 on variable 12 measuring trait O (Placid Vs. Insecure), followed by a moderate loading of .529 on variable 17 measuring Environmental Sensitivity. Next, there is a high negative loading of -.609 on variable 24 measuring attitude towards teaching (MTAI). On variable 2 (Less Intelligent) Vs. More Intelligent) there is a low loading of .321. This factor has been termed as one of Insecurity.

The picture for the inservice Arts teachers is that they are venturesome, socially bold, carefree and friendly. They do not have any unreasonable sense of inferiority. They also have a creative individuality in that they prefer to work alone rather than in groups, are self-starters, critical of others and working for long hours without getting tired. They seem to be conventional and concerned with immediate interests and issues. Though worried they are steady. They

have shown a progressive attitude towards teaching and it is not surprising in view of the above characteristics. On variables 23 and 6 since there are low loadings, one can not be very confident whether to rely strongly on their creative potential as measured by SAM and their lack of conscientiousness.

The Arts student teachers feel insecure, worrying and anxious. They occasionally brood and feel lonely. "Clinically" writes Cattell (Handbook, p.102) "O is very important first as one of the largest factors in anxiety." So these student teachers are anxiety ridden, feeling some sort of instability and thus begetting maladjustment. Though they have the redeeming quality of being environmentally sensitive in being responsive to the ideas of others and interested in the beautiful and humorous aspects of experience, they lack to exhibit a favourable attitude towards teaching. Now it is understandable that young teachers who feel insecurity, worry and anxiety can not show those characteristics which characterize good teachers. They would, as a result, resort to maladjusted behaviour which would not allow them to teach with confidence and work for a permissive atmosphere of freedom to think, act and speak one's mind. The low positive loading on trait B cannot, perhaps, be relied upon with confidence.

Factor J

Table 61.10
Factor J
Tension Vs. Creative Intellectuality

Variables	Description	Arts Teachers	Arts Students
2	Less Intelligent Vs. More Intelligent (B)	-	.485
13	Conservative Vs. Experimenting (Q ₁)	-.338	-
14	Group Dependent Vs. Self Sufficient (Q ₂)	.564	-
16	Relaxed Vs. Tense (Q ₄)	.850	-
20	Intellectuality	-	.868
23	Creativity	-	.362

For the inservice Arts teachers factor J has a very high loading of .850 on variable 16 measuring trait Q₄ (Relaxed Vs. Tense), followed by a rather moderate high loading of .564 on variable 14 measuring trait Q₂ (Group Dependent Vs. Self-sufficient). On variable 13 measuring trait Q₁ (Conservative Vs. Experimenting) there is a negative loading of -.338. This factor has been called as one of Tension.

For the Arts student teachers this factor has a very high loading of .868 on variable 20 measuring Intellectuality, followed by a moderate loading of .485 on variable 2 measuring trait B (Less Intelligent Vs. More Intelligent). There is a low loading of .362 on variable 23 measuring Creativity. This

factor can accordingly be designated as one of Creative Intellectuality.

The Arts inservice teachers with high ergic tension Q_4 , are not relaxed or calm or composed. This "is one of the highest loaded factors in general anxiety," Q_{II} - second order factor (Cattell, Handbook, p.108). They are, however, self-sufficient and resourceful and prefer their own decisions. But it is surprising how persons with high tension can be self-sufficient and it is difficult to speculate. More investigations on larger samples are warranted. The fact that they are conservative is as it should be.

The Arts student teachers are characterized by intellectuality having intellectual curiosity, enjoying challenging tasks and possessing imagination. They like to reconstruct things and ideas differently, preferring to do things in an original manner and not following a prescribed routine course of action. They are also moderately intelligent. Their creativity with low loading can not be commented upon confidently.

Contd.

Factor K

Table 61.11
Factor K
Creative Artistry

Vari- ables	Description	Arts Teachers	Arts Students
3	Less Stable Vs. More Stable (C)	-	-.336
4	Submissive Vs. Dominant (E)	-	-.338
22	Artistry	-	.887

Factor K has emerged in the Arts student teacher group only. This factor has a very high loading of .887 on variable 22 measuring Artistry, followed by a low negative loading of -.336 on variable 3 measuring trait C (Less Stable Vs. More Stable). On variable 4 measuring trait E (Submissive Vs. Dominant) there is also a low negative loading of -.338. This factor has been termed as Creative Artistry.

The suggested picture for the Arts student teachers would be that they are talented youngmen with a capacity to produce objects, models, paintings, etc. They can write stories, plays, poems and other literary compositions. This phenomenon is as it should be because the education in Arts subjects has made them able to write short stories, novels and other literary pieces. They are less stable and more submissive. But in view of low loadings on variables 3 and 4 nothing can be said with an amount of confidence.

SECTION F

FACTOR CLUSTER OF VARIABLES IN INSERVICE COMMERCE
TEACHERS AND COMMERCE STUDENT TEACHERS

Identification of Factors

The factors which has been identified on the basis of factor analysis for inservice Commerce teachers and Commerce student teachers are listed below :

<u>Factor</u>	<u>Inservice Commerce Teachers</u>	<u>Commerce Student Teachers</u>
A	Creative Intellectuality	Vs. Creative Self-strength
B	Creative Individuality	Vs. Conscientious Warm-heartedness
C	Relaxed Conventionality	Vs. Permissive Tolerance
D	Apprehensiveness	Vs. Self-sufficiency
E	Convergent Intellectuality	Vs. Unconventional Intellectuality
F	Stability	Vs. Shrewdness
G	Sensitivity	Vs. Self-Discipline
H	Environmental Insensitivity	Vs. Dominance
I	Favourable Teaching Attitude	Vs. Surgency
J	---	Radicalism

Factor A

Table 62.1

Factor A

Creative Intellectuality Vs. Creative Self-Strength

Variables	Description	Commerce Teachers	Commerce Students
6	Expedient Vs. Conscientious (G)	-.470	-
7	Shy Vs. Adventurous (H)	-.405	-
8	Toughminded Vs. Tenderminded (I)	-	-.344
17	Environmental Sensitivity	.365	-
19	Self Strength	-	.810
20	Intellectuality	.839	.413
21	Individuality	.336	.367
23	Creativity	.859	.885

Factor A for the inservice Commerce teachers has a very high loading of .859 on variable 23 measuring Creativity, followed by one more very high loading of .839 on variable 20 measuring Intellectuality and another a low loading of .336 on variable 21 measuring Individuality. On variable 17 measuring Environmental Sensitivity there is also a low loading of .365. On variables 6 and 7 measuring trait G (Expedient Vs. Conscientious) and H (Shy Vs. Adventurous) there are moderate negative loadings of -.470 and -.405, respectively. This factor, evidently, is a factor of Creative Intellectuality.

Factor A for Commerce student teachers has a very high loading of .885 on variable 23 measuring Creativity followed by a high loading of .810 on variable 19 measuring Self-strength. On variables 20 and 21 measuring Intellectuality and Individuality, the respective loading are .413 and .367. On variable 8 measuring trait I there is a low negative loading of -.344. This factor has been characterised as Creative Self-strength.

The picture for the inservice Commerce teachers would be that they have self-confidence, are resourceful, and willing to take risks, have an amount of initiative, are self-starters and can to some extent write stories, plays and other literary compositions. They have pronounced intellectual curiosity, like to reconstruct things and ideas to form something different and dislike doing things in a prescribed way. They have environmental sensitivity and individuality. But in view of the modest loadings in variable 17 and 20 nothing can be said with definiteness with regard to environmental sensitivity and individuality. The moderate negative loadings on variables 6 and 7 would point out that they are expedient, disregarding rules and obligations to people. Besides, they are shy, withdrawn, emotionally cautious with restricted interests.

The Commerce student teachers are predominantly creative because of the highest loading on creativity and also of a moderate loading on intellectuality. Paraphrased, it would mean that these Commerce student teachers have enough creative potential, self-confidence, resourcefulness

and capacity to take risks and have excellance in organisational abilities. Besides, they have intellectual curiosity, enjoying challenging tasks with due imagination, preferring doing things in their own way and fashion and not following routine or prescribed things or procedures. They would like to work alone rather than in groups. But in view of the low loadings on Individuality one cannot be too emphatic about it. Similarly, there is a low loading on variable 8 and one cannot say anything with confidence regarding their toughness or unsentimentality or being self-reliant.

Factor B

Table 62.2
Factor B

Creative Individuality Vs. Conscientious Warmheartedness

Variables	Description	Commerce Teachers	Commerce Students
1	Reserved Vs. Outgoing (A)	-	.721
3	Less Stable Vs. More Stable (C)	-	.504
4	Submissive Vs. Dominant (E)	-.529	-
6	Expedient Vs. Conscientious (G)	-	.775
11	Forthright Vs. Shrewd (N)	-.642	-
15	Uncontrolled Vs. Controlled (Q ₃)	.685	-
17	Environmental Sensitivity	-	.336
21	Individuality	.769	-
22	Artistry	-.365	-
24	MTAI	-	-.425

Factor B for the inservice Commerce teachers has a very high loading of .769 on variable 21 measuring Individuality, followed by a high loading of .685 on variable 15 measuring trait Q₃ (Uncontrolled Vs. Controlled). On variable 4 measuring trait E (Submission Vs. Dominant) there is a moderate negative loading of -.529, followed by a high negative loading of -.642 on variable 11 measuring trait N (Forthright Vs. Shrewd). On variable 22 measuring Artistry there is also a negative loading of -.365. This factor has been called Creative Individuality.

Factor B for the Commerce Student teachers has a very high loading of .775 on variable 6 measuring trait G (Expedient Vs. Conscientious), followed by an almost equally high loading of .721 on variable 1 measuring trait A (Reserved Vs. Outgoing). On variable 3 measuring trait C (Less Stable Vs. More Stable) there is a moderate loading of .504 followed by a low loading of .336 on variable 17, measuring Environmental Sensitivity. On variable 24 measuring attitude towards teaching there is a moderate negative loading of -.425. This factor may be characterized as Conscientious Warmheartedness.

The picture for Commerce teachers is one of marked individuality. They would prefer to work for long hours without getting tired, they would also prefer to work alone rather than in groups, see themselves as self-starters think for themselves but are critical of others. They are not socially precise, are careless of social rules and follow their own urges being somewhat lax. They are submissive in

that they are conventional and conforming. It is rather surprising that as people of marked individuality they are submissive and conforming. Perhaps, it is from reluctant pragmatic considerations that they have to be submissive or conforming for their survival. They are also forthright, spontaneous and natural. They, however, lack the capacity to write stories, poems and plays, etc.

The picture for the Commerce student teachers would be one of conscientiousness, perserving and determined individuals. They are dominated by a sense of duty and are concerned about moral standards and rules. A "G person," writes Cattell (Handbook, p.89) "views himself correct in, and a guardian of, manners and morals." They are also responsible. A very positive loading on trait A would suggest that these student teachers are warmhearted, outgoing and trustful. They enjoy social recognition and are willing to "go along" with expediency. Besides, they are emotionally mature, stable and face reality calmly. They are not annoyed by things and people and are not dissatisfied with the world or family life. They are environmentally sensitive to some extent. In view of all these redeeming characteristics of an "effective teacher" it is really surprising as to why and how they have indicated a negative or an unfavourable attitude towards teaching. A possible but speculative explanation would be that the positive traits listed above do not contribute to effective teaching (teacher effectiveness and its correlates have not been to date operationally defined)

or that organisation of teachers colleges, the caliber of its faculty members and the programmes followed are soulless and inspid (Report of the Educational Commission, 1966), that they do not inspire conscientious student teachers to have a positive attitude towards teaching. However, the explanation is at best tentative and needs further verification.

Factor C

Table 62.3

Factor C

Relaxed Conventionality Vs. Permissive Tolerance

Vari- ables	Description	Commerce Teachers	Commerce Students
1	Reserved Vs. Outgoing (A)	.321	-
4	Submissive Vs. Dominant (E)	-.523	-
6	Expedient Vs. Conscientious (G)	.341	-
8	Toughminded Vs. Tenderminded (I)	-	.403
9	Trusting Vs. Suspicious (L)	-	-.819
10	Practical Vs. Imaginative (M)	-.666	-
13	Conservative Vs. Experimenting(Q ₁)	.408	-
14	Group Dependent Vs. Self Sufficient (Q ₂)	.314	.351
16	Relaxed Vs. Tense (Q ₄)	.761	.576
19	Self-Strength	.320	-

This factor for the Commerce inservice teachers has a very high loading of .761 on variable 16 measuring trait Q_4 (Relaxed Vs. Tense) followed by a moderate loading of .408 and .341 on variables 13 and 6 measuring Q_1 (Conservative Vs. Experimenting) and G (Expedient Vs. Conscientious), respectively. On variable 1 and 19 measuring trait A (Reserved Vs. Outgoing) and Self strength there are modest low loadings of .321 and .320, respectively. On variable 14 measuring trait Q_4 (Group Dependent Vs. Self-sufficient) there is a modest low loading of .314. On variables 4 and 10 measuring trait E (Submissive Vs. Dominant) and M (Practical Vs. Imaginative) there are moderate and negative loadings of -.523 and -.666, respectively. In selecting a proper name for this factor for the inservice Commerce teachers cognizance shall have to be taken of the two variables 16 and 10 though one has a positive and the other a negative loading on this factor. This factor, in view of these considerations, has been termed as Relaxed Conventionality.

Factor C for the Commerce student teachers has a very high negative loading of -.819 on variable 9 measuring trait L (Trusting Vs. Suspicious), followed by an appreciably moderate loading of .576 in variable 16 measuring trait Q_4 (Relaxed Vs. Tense). On variables 8 and 14 measuring trait I (Toughminded Vs. Tenderminded) and Q_2 (Group Dependent Vs. Self-sufficient) the respective loadings are .403 and .351. This factor can be termed as Permissive Tolerance.

The picture for the Commerce teachers would be that they have no id pressures and are relaxed, tranquil, unfrustrated and composed. Anxiety does not trouble them. These people are, by and large, conventional, conservative, respecting customs, established ideas and tolerant of traditional difficulties. They are submissive, humble and conforming and tolerably (because of low loading), perhaps, expedient. Socially they are group dependent, "joiners" and sound followers. They possess an outgoing, warmhearted nature and possess self-strength and confidence.

The picture for the Commerce student teachers would be that they are permissive and tolerant, prepared to accept personal unimportance. They are ready to forget difficulties. Unlike high L persons they are not critical and derogatory of others nor do they expect children to show more respect to their elders (Cattell, Handbook, pp.249-252). They are not anxious also. As expected, such youngmen would be without any id pressures, and relaxed composed and as persons who accept personal unimportance, they expect affection, help and sympathy. To some extent they are self-sufficient but in view of the low loading on this variable one cannot say anything with an amount of confidence in this regard.

Contd.

Factor D

Table 62.4

Factor D

Apprehensiveness Vs. Self-sufficiency

Variables	Description	Commerce Teachers	Commerce Students
5	Sober Vs. Happy-Go-Lucky (F)	.327	-
7	Why Vs. Adventurous (H)	.580	-
12	Placid Vs. Insecure (O)	.764	-.542
14	Group Dependent Vs. Self-sufficient (Q ₂)	-	.716
22	Artistry	-.315	.583
24	MTAI	-	.538

Factor D for the inservice Commerce teachers has a very high loading of .764 on variable 12 measuring trait O (Placid Vs. Insecure), followed by a rather high loading of .580 on trait 7 measuring H (Shy Vs. Adventurous). On variable 5 measuring trait F (Sober Vs. Happy-Go-Lucky) there is a low loading of .327, followed by a negative loading of -.315 on variable 22 measuring Artistry. This factor may be characterized as Apprehensiveness.

Factor D for the Commerce student teachers has a very high loading of .716 on variable 14 measuring trait Q₂ (Group Dependent Vs. Self-sufficient), followed by an appreciable moderate loadings of .583 and .538 on variables

22 measuring Artistry and 24 measuring attitude towards teaching (MTAI). On variables 12 measuring trait 0 (Placid Vs. Insecure) there is a negative loading of $-.542$. This factor has been called Self-sufficiency.

The Commerce teachers are apprehensive, feeling insecurity and therefore characterised by anxiety. But these teachers are not withdrawn and are socially bold. They do not have an undue sense of inferiority and have little "inhibition to threat" (Cattell, Handbook, p.92). In a word they are adventurous. They are talkative and enthusiastic lacking in artistry. They can not, perhaps, write essays, stories, poems and other literary compositions. But one cannot be certain about the last two characteristics measured by variables 5 and 22 in view of the rather low loadings.

The picture for the Commerce student teachers would be that they are self-sufficient, resourceful and prefer their own decisions. They are not sound followers or "joiners", nor dependent on group opinions. They are introverted as " Q_2 is a central primary in the invia (introversion) second order factor" (Cattell, Handbook, p.105). The self-sufficiency trait is one of the important characteristics of a creative person. It is self-sufficiency that favours creativity and independence of mind. They have an amount of Artistry and can write essays, compositions, poems and other literary pieces. They are self-assured, placid and self-confident. They do not worry, or get easily depressed. Their attitude towards teaching is favourable. It seems that, perhaps, Q_2+

(Self-sufficiency) and O- (Placidity) are in a way related to positive teaching attitudes for these student teachers and under the conditions of this study. Cattell and Drevdahl (1955) have shown, that among other traits O- was a characteristics of teaching effectiveness. Kaul (1974) also found O-, among other traits, to characterise popular teachers.

Factor E

Table 62.5

Factor E

Convergent Intellectuality Vs. Unconventional Intellectuality

Vari- ables	Description	Commerce Teachers	Commerce Students
2	Less Intelligent Vs. More Intelligent (B)	.714	-
9	Trusting Vs. Suspicious (L)	.697	-
10	Practical Vs. Imaginative (M)	.402	.781
13	Conservative Vs. Experimenting(Q ₁)	.340	-
20	Intellectuality	-	.718
21	Individuality	-	.573

For the inservice Commerce teachers this factor has a very high loading of .714 on variable 2 measuring trait 2 (Less Intelligent Vs. More Intelligent), followed by a high loading of .697 on variable 9 measuring trait L (Trusting Vs. Suspicious). On variable 10 measuring trait M (Practical

Vs. Imaginative) there is a moderate loading of .402 followed by variable 13 with a low loading of .340 measuring trait Q₁ (Conservative Vs. Experimental). This factor may be called convergent Intellectuality.

Factor E for the Commerce student teachers has a very high loading of .781 on variable 10 measuring trait M (Practical Vs. Imaginative), followed by almost an equally very high loading of .718 on variables 20 measuring Intellectuality. On variable 21 measuring Individuality there is a moderate loading of .573. This factor has been termed as one of Unconventional Intellectuality.

The Commerce teachers present a picture of convergent intelligence and significant intellectual adaptability. They show better judgement and are perserving. But they are also suspicious, demanding that other people should own responsibility over errors. Intellectual adaptability, so it seems, has not provided them with a capacity to withstand dogmatism and jealousy. As people who have studied Commerce they are practical, alert to immediate needs and guided by objective realities. Lastly they are experimenting and liberal but in view of the low loading on variable 13 it is difficult to say anything with an amount of definiteness.

The picture for the Commerce student teachers would be one of unconventionality. They are "internally autonomous, thinking" (Cattell, Handbook, p.98), people. Occasionally they are absorbed in ideas, etc. etc. Their pronounced intellectuality enables them to have intellectual curiosity

and enjoy challenging jobs. Fired by imagination they have a preference for adventure over routine. They like reconstructing things and ideas to form something different and dislike doing things in a prescribed routine way. They would like to work alone rather than in groups. They are not unoften critical of others and think for themselves. They would like to work for long hours without getting tired.

Factor F

Table 62.6
Factor F
Stability Vs. Shrewdness

Vari- ables	Description	Commerce Teachers	Commerce Students
3	Less Stable Vs. More Stable (C)	.750	-
5	Sober Vs. Happy-Go-Lucky (F)	.715	-
6	Expedient Vs. Conscientious (G)	-.413	-
7	Shy Vs. Adventurous (H)	-	.339
8	Toughminded Vs. Tenderminded (I)	-	-.538
11	Forthright Vs. Shrewd (N)	-	.814
15	Uncontrolled Vs. Controlled (Q ₃)	-	-.355
18	Initiative	-.588	-

For inservice Commerce teachers this factor has a very high loading of .750 on variable 3 measuring trait C (Less Stable Vs. More Stable), followed by an appreciably high loading of .715 on variable 5 measuring trait F (Sober

Vs. Happy-Go-Lucky). On variables 6 and 18 measuring trait G (Expedient Vs. Conscientious) and Initiative there are negative moderate loadings of $-.413$ and $-.588$, respectively. This factor has been termed as Stability.

Factor F for the Commerce student teachers has a very high loading of $.814$ on variable 11 measuring trait N (Forthright Vs. Shrewd), followed by a low loading of $.339$ on variable 7 measuring trait H (Shy Vs. Adventurous). On variable 8 measuring trait I (Toughminded Vs. Tenderminded) there is a negative loading of $-.538$, followed by a low negative loading of $-.355$ on variable 15 measuring trait Q_3 (Uncontrolled Vs. Controlled). Evidently this factor may be termed as one of Shrewdness.

The Commerce teachers present a picture of higher ego-strength, are emotionally stable, calm and are constant in interests. They are not easily annoyed by things and people nor dissatisfied with their families or other restrictions of life. They are cheerful, happy-go-lucky, frank but with less exacting aspiration" (Cattell, Handbook, p.87). But they are expedient and occasionally disregard rules. They lack initiative in directing, playing leading roles in dramatics, and musical compositions and bringing about changes in organisational procedures.

The picture suggested by the Commerce teachers is that they are characterized by shrewdness, are astute and polished. They are insightful not only regarding themselves but others also. Being ambitious they are possibly insecure

sometimes. "High N are", writes Cattell (Handbook, p.101), "individuals to be kindly tolerant of most people and their failings." They are self-reliant and acting on practical, logical evidence. By and large, they do not dwell on physical disabilities. Their venturesomeness and laxness with regard to social rules cannot be confidently commented upon in view of the low loadings on variables 7 and 15.

Factor G

Table 62.7

Factor G

Sensitivity Vs. Self-Discipline

Variables	Description	Commerce Teachers	Commerce Students
1	Reserved Vs. Outgoing (A)	-.529	-
7	Shy Vs. Adventurous (H)	-	.698
8	Toughminded Vs. Tenderminded (I)	.781	-
13	Conservative Vs. Experimenting (Q ₁)	.343	-
15	Uncontrolled Vs. Controlled (Q ₃)	-	.772
19	Self Strength	.587	-
22	Artistry	-	.448
24	MTAI	-	-.331

This factor for the Commerce inservice teachers has a very high loading of .781 on variable 8 measuring trait I (Toughminded Vs. Tenderminded), followed by a rather high loading of .587 on variable 19 measuring Self-strength. There

is a high negative loading of $-.529$ on variable 1 measuring trait A (Reserved Vs. Outgoing). The loadings on variable 13 measuring Q_1 (Conservative Vs. Experimenting) is $.343$. This, evidently, is a factor of Sensitivity.

Factor G for the Commerce student teachers has a very high loading of $.772$ on variable 15 measuring trait Q_3 (Uncontrolled Vs. Controlled), followed by a high loading of $.698$ on variable 7 measuring trait H (Shy Vs. Adventurous). On variable 22 measuring Artistry there is a moderate loading of $.448$, followed by a low negative loading of $-.331$ on variable 24 measuring attitude towards teaching (MTAI). This factor may be characterized as Self-Discipline.

The Commerce teachers are sensitive, tenderminded, expecting affection and seeking attention. They feel occasionally insecure and are anxious about themselves. But with all this they have expressed some sort of self-confidence and, perhaps, their insecurity motivates or compels them to take risks. Otherwise they are good natured people, trustful and easy going. Not unoften they are warmhearted and trustful. They are analytical, free thinking and radical. But in view of the modest loading on this variable nothing can be said with definiteness.

The Commerce student are self-disciplined with an exacting will power, socially precise and following their self-images. They are free of anxiety also. They are besides venturesome, socially bold and not tormented by a sense of inferiority. They too have a resilience to with stand

hardships and emotional situations in the teaching learning process. These student teachers have an interest in producing plays, writing poems and other literary compositions. But their attitude towards teaching, as measured by MTAI, is not favourable. But in view of the very low loadings on this variable, nothing can be said with certainty.

Factor H

Table 62.8

Factor H

Environmental Insensitivity Vs. Dominance

Variable	Description	Commerce Teachers	Commerce Students
2	Less Intelligence Vs. More Intelligent (B)	-	.640
4	Submissive Vs. Dominant (E)	-	.748
12	Placid Vs. Insecure (O)	-	.397
13	Conservative Vs. Experimenting (Q ₁)	-.399	-
14	Group Dependent Vs. Self-Sufficient (Q ₂)	.377	-
17	Environmental Sensitivity	-.726	.454
22	Artistry	.621	-

For Commerce teachers this factor has a very high negative loading of -.726 on variable 17 measuring Environmental Sensitivity followed by a high loading of .621 on variable 22 measuring Artistry. There is a loading of .377

on variable 14 measuring trait Q_2 (Group Dependent Vs. Self-Sufficient), followed again by a low though negative loading of $-.339$ on variable 13 measuring Q_1 (Conservative Vs. Experimenting). Evidently this is a factor of Environmental Insensitivity.

Factor H for the Commerce student teachers has a very high loading of $.748$ on variable 4 measuring trait E (Submissive Vs. Dominant), followed by a high loading of $.640$ on variable 2 measuring trait B (Less Intelligent Vs. More Intelligent). There is a moderate loading of $.454$ on variable 17 measuring Environmental Sensitivity, followed by a low loading of $.397$ on variable 12 measuring trait O (Placid Vs. Insecure). This factor may be characterized as one of Dominance.

The Commerce teachers are environmentally insensitive people. They are not open to the ideas of others and are not interested in the beautiful and humorous aspects of experience. They also have no sensitivity to meaningful relations. But they have expressed a strong capacity to produce models, paintings, produce stories, plays and other literary compositions. They are moderately self-sufficient people and resourceful, preferring their own decisions whatever they are. They are conventional, conservative and conforming. But the low loadings here do not allow one to assert this conclusion with an amount of confidence.

The picture for the Commerce student teachers would be one of dominance, assertion, independent mindedness and

unconventionality. "They 'feel free to participate', they raise group problems, and they criticise group defects" (Cattell, Handbook, p.86). They are also intelligent insightful and fast learning. Regarding environmental sensitivity they are open to the ideas of others and have sensitivity to meaningful relations. They are rather apprehensive, worrying and anxious. But in view of low loadings on the variable 12 measuring trait O, nothing can be said with Confidence.

Factor I

Table 62.9

Factor I

Favourable Teaching Attitude Vs. Surgency

Vari- ables	Description	Commerce Teachers	Commerce Students
1	Reserved Vs. Outgoing (A)	.520	-
3	Less Stable Vs. More Stable (C)	-	.421
5	Sober Vs. Happy-go-Lucky (F)	-	.802
9	Trusting Vs. Suspicious (L)	-.360	-
14	Group Dependent Vs. Self-sufficient (Q ₂)	.408	-
18	Initiative	-	-.654
24	MTAI	.779	-

For the Commerce inservice teachers this factor has a very high loading of .779 on variable 24 measuring attitude

towards teaching, followed by a moderate loading of .520 on variable 1 measuring trait A (Reserved Vs. Outgoing). On variable 14 measuring trait Q₂ (Group Dependent Vs. Self-Sufficient) there is a moderate loading of .408 followed by a negative loading of -.360 on variable 9 measuring L (Trusting Vs. Suspicious). This factor can be called one of Favourable Teaching Attitude.

Factor I for the Commerce student teachers has a very high loading of .802 on variable 5 measuring trait F (Sober Vs. Happy-go-Lucky), followed by a moderate loading of .421 on variable 3 measuring trait C (Less Stable Vs. More Stable). There is a high though negative loading of -.654 on variable 18 measuring Initiative. This factor may be termed as one of Surgency.

Commerce teachers have a very favourable attitude towards teaching. They enjoy teaching and being with their pupils. Redicule and sarcasm are absent. There is a permissive atmosphere of freedom to think and act and speak one's mind both for the teachers and pupils. Common goals and common understandings characterize the teacher pupil relationship. These teachers are self-sufficient resourceful and prefer their own decisions. They are, again, warmhearted, good-natured and trustful. Naturally they are trusting, tolerant and conciliatory, accepting personal unimportance.

The picture for the Commerce student teachers would be that they have a high amount of surgency, are happy-go-lucky, cheerful and frank. "In group interaction measures,"

writes Cattell (Handbook, p.88) "surgents make many group-favourable remarks... and are widely accepted." They are stable, emotionally mature, calm and unruffled. But they significantly lack initiative in producing or playing dramatics and musical compositions. They are also slow in producing new formulas or products and bring about changes in organizational procedures and the like.

Factor J

Table 62.10
Factor J
Radicalism

Vari- ables	Description	Commerce Teachers	Commerce Students
2	Less Intelligent Vs. More Intelligent (B)	-	-.424
13	Conservative Vs. Experimenting (Q ₁)	-	.807
18	Initiative	-	.316
21	Individuality	-	.337

Factor J for the Commerce student teachers has a very high loading of .807 on variable 13 measuring trait Q₁ (Conservative Vs. Experimenting), followed by a moderate negative loading of -.424 on variable 2 measuring trait B (Less Intelligent Vs. More Intelligent). On variables 18 and 21 measuring initiative and Individuality there are low

loadings of .316 and .337, respectively. Obviously it is a factor of Radicalism. Factor J has appeared only for the Commerce student teachers.

The picture for the Commerce student teachers here is that they are radical, with an experimental attitude. They are free thinking and interested in breaking the crust of custom and tradition. They want to experiment with problem solutions and are less inclined to moralize. But surprisingly, as revealed by the results, they are moderately less intelligent judged on the basis of convergent thinking. They have a low amount of initiative and individuality. But the low loadings on variables 18 and 21 measuring Initiative and Individuality does not enable one to take this phenomenon with an amount of definiteness.