The first atep in tho analysis of ine intercorre? ations between the 22 traits was an estimaide of the commalitieg. The first estimate waz the highost absolute value of the correlation ocefficients in each of the successive colums of the correlation maurfx. Therse values werc checked by two successiva factorings by the centroid method. These estimates are given below and it will be seen that the two last estimates are in agrement within $\pm, 06$. Table XXXT.

Susorssive Estimates of the Communalitier.

| Trait | Highest r | 1 | 2 |
| :---: | :---: | :---: | :---: |
| 1 | .71 | .71 | .71 |
| 2 | .64 | .64 | .66 |
| 3 | .71 | .57 | .57 |
| 4 | .51 | .58 | .56 |
| 5 | .61 | .60 | .58 |
| 6 | .67 | .70 | .68 |
| 7 | .34 | .38 | .34 |
| 8 | .61 | .58 | .61 |
| 9 | .64 | .62 | .68 |
| 10 | .52 | .52 | .49 |
| 11 | .67 | .73 | .77 |
| 12 | .58 | .66 | .65 |
| 13 | .62 | .61 | .57 |
| 14 | .58 | .55 | .52 |
| 15 | .55 | .54 | .52 |
| 16 | .30 | .30 | .28 |
| 17 | .43 | .48 | .49 |
| 18 | .54 | .64 | .65 |
| 19 | .51 | .58 | .59 |
| 20 | .55 | .57 | .55 |
| 21 | .48 | .52 | .52 |
| 22 | .61 | .61 | .58 |

The final orthogonal factor matrix obtained by the
centroid method of factoring had 6 factors and is given in Table KXXII. In this fastoring the diagonal entries were the commalities given in column 1 above. A frequency distribution of the sixtb. factor residunls is given in Table XXXIII.

## Table XXXII.

Orthogonal Factor Matrix F.

|  | I | II | III | IV | V | VI |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 1 | -.38 | .51 | .34 | .27 | -.11 | -.33 |
| 2 | -.50 | .33 | -.12 | .32 | .29 | .32 |
| 3 | -.30 | .45 | .34 | .10 | -.21 | -.33 |
| 4 | -.38 | -.50 | -.34 | -.21 | -.08 | .02 |
| 5 | .67 | .24 | -.18 | -.18 | -.05 | .08 |
| 6 | -.77 | . .16 | -.09 | .05 | -.15 | .16 |
| 7 | . .00 | -.49 | .12 | .05 | .27 | .06 |
| 8 | .41 | .16 | .56 | -.26 | -.17 | .07 |
| 9 | -.57 | .26 | .15 | .22 | .24 | .40 |
| 10 | .53 | . .11 | -.24 | .33 | -.12 | -.14 |
| 11 | .68 | -.39 | .20 | .11 | .29 | -.14 |
| 12 | .64 | -.06 | -.30 | .21 | -.32 | .04 |
| 13 | .65 | -.26 | .11 | .24 | .07 | -.09 |
| 14 | -.63 | -.18 | .25 | -.11 | .08 | -.10 |
| 15 | -.31 | -.54 | .23 | -.18 | -.09 | .13 |
| 16 | . .19 | -.45 | -.02 | .19 | -.04 | -.02 |
| 17 | . .23 | .50 | -.26 | -.16 | .25 | -.18 |
| 18 | -.47 | -.18 | -.60 | -.11 | .15 | -.06 |
| 19 | -.25 | .21 | -.54 | -.20 | .20 | -.33 |
| 20 | -.46 | -.42 | .35 | -.14 | -.13 | .06 |
| 21 | .50 | .31 | .18 | -.30 | -.02 | .22 |
| 22 | .55 | .46 | -.11 | -.21 | .07 | .05 |

## Table XXXIII.

Frequency Distribution of the Sixth Factor Residuals.

| ResiduaI. |
| :---: |
| -.14 |
| -.13 |
| -.12 |
| -.11 |
| -.10 |
| . .09 |
| -.08 |
| -.07 |
| -.06 |
| .05 |
| -.04 |
| -.03 |
| -.02 |
| -.01 |
| .00 |
| .04 |
| .02 |
| .03 |
| .04 |
| .05 |
| .06 |
| .07 |
| .08 |
| .09 |

Frequency.
2
2

The orthogonal factor atrix F was zotated by the method of radial rotation. The transformation matrix $\wedge$ and the resulting oblique factor matrix $V$ are given below:

Table XXXIV,
Trensformation Matrix $\Lambda$.

|  | A | B | 9 | D | E | F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| I | . 186 | . 252 | . 386 | -. 116 | -. 050 | -. 101 |
| II | -, 180 | . 297 | . 645 | . 344 | . 255 | . 216 |
| III | . 332 | -. 466 | . 178 | 0.142 | -. 483 | . 057 |
| IV | . 180 | . 637 | -. 525 | . 393 | -. 157 | . 503 |
| $\checkmark$ | .829 | -. 420 | . 212 | -. 122 | . 670 | . 546 |
| VI | -. 321 | . 228 | . 288 | -. 710 | -. $4_{7} 71$ | . 624 |

Table XXXV.
Oblique Factor Matrix V.

|  | A | B | C | D | E |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | . 01 | . 04 | -. 02 | .72 | . 04 | . 04 |
| 2 | .00 | . 18 | -. 02 | -. 02 | . 18 | . 63 |
| 3 | -.07 | -. 03 | . 04 | . 64 | -. 02 | -. 12 |
|  | -. 20 | -. 18 | -. 43 | -. 36 | . 04 | -. 22 |
| 5 | -. 08 | , 25 | . 49 | -. 20 | . 04 | -. 09 |
| 6 | -. 37 | . 02 | -. 22 | . 03 | -. 03 | . 15 |
| 7 | . 36 | -. 24 | -. 21 | -. .18 | -. 05 | . 10 |
| 8 | . 02 | -. 19 | . 48 | . 12 | -. 37 | -. 15 |
| 9 | . 01 | -. 01 | . 02 | . 00 | -. 02 | . 61 |
| 10 | . 00 | . 51 | -. 01 | . 11 | . 03 | -. 03 |
| 11 | . 57 | -. 12 | ,01 | -. 02 | -. 01 | -. 02 |
| 12 | -. 21 | . 56 | -. 01 | -. 13 | -. 19 | -. 14 |
| 13 | . 33 | . 14 | -. 03 | . 03 | -. 13 | -. 01 |
| 14 | . 08 | -. 45 | -. 27 | . 14 | . 01 | -. 04 |
| 15 | -.02 | -. 47 | -. 30 | -. 19 | -. 31 | -, 13 |
| 16 | . 32 | . 06 | -. 33 | -. 09 | $-.17$ |  |
| 17 | . 10 | . 08 | . 45 | . 06 |  | . 01 |
| 18 | -. 13 | -. 04 | -. 33 | -. 29 | 143 | -. 16 |
| 19 | -. 0.3 | -. 04 | . 00 | -. 01 | . 66 | -. 16 |
| 20 | -. 05 | -. 42 | -.32 |  |  | -. 00 |
| 21. | -. 04 | . 00 | . 64 | $-.14$ | -. 18 | . 00 |
| 22 | -,01 | . 17 | . 63 | -. 08 |  |  |

Interpretsing of the Factors.

Factors B, C and $B$ in the $V$ matrix. (Table $X X X V$ ) are very similar to three of the factors obtained from the pocitive pole matrix. We shall interpret these first. For ready reference in the inte-pretation, a list of the negative pole traits together With their respective code numbers is given ererleaf:

Negative Pole Traits with Code Numbers,

1 Disegreeable
2 Depressed
3 Unco-operative
4 Indeoisive
5 Undemonsurative
6 Emotionally Unstable
7 Lethargic
8 Indifferent
9 Moody
10 Serious
11 Placid

12 Cautious
13 Sedate
14 Quitter
15 Procrastinator
16 Slow Worker
17 Avoids Company
18 Lacking in Confidence
1.9 Socially Uneasy

20 Spasmodic Weziser
21. Detached

22 Uncomunicative

Factor $B$ has large positive loadings of .56 on 12 (Cautious) and .51 on 10 (Serious) with a smaller loading of .25 on 5 (Undemonstrative). There are high negative loadings of -.45 on 14 (Quitter), -.42 on 20 (Spasmodic Worker) and -.41 on 15 (Prosrastinator). There is a picture of cautious, serious and somewhat undemonstrative behavicur combined with persistent, steady and willing work.

In this factor the loadings are on exactly the same behaviour traits as those involved in Factor a from the positive pole matrix, though here we are dealing with the opposite poles of the continua. The loadings for both fastor: are given below and it will be seen that there is a striking similarity between them:

Factor B (Negative Pole) Factor A (Positive Pole)

| Code | Trait | Looding | Code | Trait | Loading |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Number | Trait | Loading | Number | Impulsive | -. 56 |
| 12 | Gautious | $+.56$ | 10 | Happy-go-1ucky | -. 32 |
| 10 | Serious Undemonstrative | +.51 +.25 | 5 | Demonstrative | -. 42 |
|  |  |  |  | Persevering | +. 45 |
| 14 | Quitter | -. 45 | 20 | Steady Woriker | +. 47 |
| 20 | Spasmodic Worker | -. 42 | 15 | Prompt Starter | . 29 |
| 15 | Procrastinator | 41 |  |  |  |

This factor is diractiy interproted from the corresponding factor in the previous matrix. For the sake of uniformity the factors will be designated according to the positive loadings (this procedure was also adhered to for the previous matrix) and is accordingly designated Secondary Function.

Mention may oe made here of the fact that the interpretation of the factors has been based on the total pattern of telulviour Indicated by the combination oi leailings for the factor, rather than as 4 mere summation procese of the belaviour characteristics indicated
by eash successive loadine.
This is necessary because the test items in the analyses are single descriptive adjeatives which might be interpreted in slightly different ways by the raters for the experimental population. It is essential, therefore, to study the combination of loadings to determine the type of behaviour the traits could have in cormon and why they cohere.

In Faotor $\mathbb{A}$ above, it seems likely that traits 14, 20 and 15 have been interpreted in terms of a steady oautious approach as opposed to a quick and changeable one. One might have expected the behaviour chazacteristics described by these traits to bo included in factors concerned with driving force such as the Activity factors. It will be seen in the discussion of the following factor from the negative pole matrix, which is designated Activity, that this combination of traits does appear though with relatively small loadings. The combination does not appear in the Activity factor from the positive pole matrix and it will be seen that in two other Activity factors, which will be discussed later, that this combination does not appear though trait 20 appears aione with a small loading in one of them.

It coula ${ }^{2}$ II be that these particular behaviour characteristics are termined toth by Function and Activity, but the experimental results inctinate that they are more olosely associated with Function and there is avident fraticioation or desoribing Factor $A$ as a Function factor.

Faotor C has high positive loadings of . 64 on 21 (Detached), .63 on 22 (Uncommunicative), 49 on 5 (Undemonatrative), .48 on 8 (Indifferent), and .25 on 17 (Avoids Company). It has negative loadings of -43 on 4 (Indecisive), -.33 on 18 (Lacking in Confldence), -.33 on 16 (Slow Worker), and -.32 on 20 (Spasmodio Worker). There are smaller negative loadings of -.30 on 15 (irooxastinator), -.27 on 14 (Quitter), -.21 on 7 (Lethargic) and -.22 cn 6 (Emotionally Unstable). This factor is very sinilar to the Factor $C$ obtained from
the previoue matrix. which was desoribod as a pictura of vigorous, keen and confident behaviour responses unhampered by emotional complexity with neglect of genial social contats and the lighter side of life. For the sake of comparison the loadings of the two factors are given below:

| Code <br> Number | Trait | Lowdi.ig | Code | Treit | Loading |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 21 | Detached | +. 64 | 21 | Sympathetic | zero |
| 22 | Uncommunicative | +. 63 | 22 | Talkative | -. 32 |
| 5 | Urdemonstrative | +. 49 | 5 | Demonstrative | -. 11 |
| 8 | Indisferent | +. 48 | 8 | Enthusiastic | zoro |
| 17 | Avoids Company | +. 45 | 17 | Seeks Company | -. 52 |
| 4 | Indecisive | $-.43$ | 4 | Decisive | +. 42 |
| 28 | Lacking in Conflidence | -. 33 | 18 | Self-cunfident | +. 42 |
| 16 | Slow Worker | -. 33 | 16 | Quick Worker | +. 13 |
| 20 | Spasmodjc Worker | -. 32 | 20 | Steady Worker | zers |
| 15 | Procrastinator | -. 30 | 15 | Prompt Starter | zero |
| 14 | Quitter | -. 27 | 14 | Persevering | zero |
| 7 | Lethargic | -. 21 |  | Energetio | +. 22 |
| 6 | Emotionally Unstable | -. 22 | 6 | Enotionally Stablo | +. 38 |

Traits 22, 5, 17, 4, 18, 16, 7 and 6 are involved in both factors and the signs of the loadings are quite consistent. In addition 21 (Detached) and 8 (Indifferent) appear in Factor $C$ from the negative pole matrix: these traits emphasise the indifferenco to the sccial side of life which is evident in both factors. In addition there are small negative loadings on 20 (Spasmodio Worker), 15 (Procrastinetor) and 14 (Quitter) which can fit in with the vigorous and hard-working behaviour responses in the factor. In short, there is a consistent elaboration of the previous Factor ; and this ons is eiso designated Activity. It rust be recognissa, hovevar, that this factor is not pre sisely the same as the HeymansWiersma Activity Factor. The results of three seperate factoria). studies indicate the possibility of social indifference conbined With the rigorous, keen, persistent, whampered and confident resm ponses which characterise the Heymans-Wier ma Activity Factor. N/ 3 must, therefore, either ascept the fact that sccial indifference is an integral pert of the Activity Factor or, (which seems much more,
likely since social behaviour is an acquired personality attribute) that social indifforence is a personality development of ten found in conjunction with the besic tehavicur responses of the Activity Factor. This peasonality development could be quite aptly desoribed as the "Strong Silent Man" type.

Factor $E$ has inigh positive loadings of .66 on 19 (Soolally Uneasy), 51 on 17 (Avoids Company) and . 43 on 18 (Lacking in Confidence) with negative loadings of -.37 on 8 (Indifferent), -.34 on 15 (Procrastinator), -.33 on 20 (Spasmodic Worker) and a smaller negative lcading of -.17 on 16 (Slow Worker). It is interesting to note that in Factor $C$ above, sooial indtfferencs was combined with self-confidence. In this fector the highest qoadings aro on 19 (Socially Uneasy), 17 (Avcide Company) and 18 /acking in Gonfidence). In other words "Lacking in Confidence" is sombined with the social attributes. This is not social indiffetence, but clearly social unease and possibly social maladjustment in combination with good work habits, but with a tendency to impul siveness. It is quite likely that the work-erphasis is a compensadion for social maladjustment. In other words, the aotivity evidont in this factor is a compensation activity sterming from arolety and maladjustment. This factor has much in comnon with Facior F obtained from the previous natrix. Their respeotive loadings are given beluw:


In the previous chapter this Factor F was cescribsd as a "Social Butterfly" type of personality development. "The behavi.our responses are those of the sociaily-confortable, pleasure-

[^0]seeking individual who is slow and dawdling as far as hysical output ano ork is concerned. "I This is the beloviour whioh is evident for the other end of the continuum of Faotor $B$ which would correspond to revorsing the positive and negative loadings, or of designeting the factor acrording to the negetive loadings. Yop the sake of uniformity, however, we shall designate the factor according to the positive loadings and will describe it as

## Compensation Activity.

Factor A is perhaps one of the most interesting of these six factors. It has a high positive lceling of .57 an 12 (Placid) and smaller positive loadings of .36 .0 n 7 (Lethargic) and .33 on 13 (sedate). It has only one negativo loading ( -.37 ) whioh is on 6 (Emotionally Unstable).

A ooherent pattern of behaviour is evident here: there is emotional adjustment combined with complete placidity. In other words the jeheviour is adjustive but shows no affect. This factor may very well be complementary to Factor B from the positive pole matrix. For the sale of convenience Factor $B$ is reproduced below:

| Factor B (Positive Pole) |  |  |
| :---: | :---: | ---: |
| Code Number | Trait | Loading |
| 2 | Cheerful | +.56 |
| 9 | Even-tempered | +.46 |
| 6 | Enotioraily stable | +.14 |
| 1 | Agreeable | +.30 |
| 10 | Happy-go-lucky | +.23 |
| 11 | High-strung | -.60 |
| 12 | Impulsive | -.56 |
| 5 | Denonstrative | -.41 |

The highest loadine is the negative one on High-strung, combined with a positive loading on Emotionally Stnble, there aro also negative loadings deroting controiled responses. In addition, ther are loadings on traits denotinc positive affect. It seems quite likely inst, there extats a behaviour continuum of adjustive responses varving from adjustive responses combired with. n ivive affect tone to adjustive responses with no
affect. If this is the case, Factor $B$ from the positive pole would be better nomed Acjustment with Positive Affect, as it was suggeatad during the discussion of that factor, and Factor A from the negative pole matrix designated Adjustment with No Affeot.

For practical purposes of temperament assesoment, however, one cannot confine the asse tement of emotionality to an adjustment continuum which varies from positive affect to no affect. We know from clinical oxperience that there are emotional responses accomponied by negative affoct, for example, disagreeableness and dopression have as strong a claim to being concons stants of an emotional state as agreeableness and cheerfulness. We knuw too that thore aro individunls whose teelings are not allowed free expyession. Thore is no overt expression of joy or pleasure or of ancer or disappointment, yo wo know by their tensoness, ferky movoments, excossive porspiration, jagged and breathless sponking, or any of these in corbination, that they aro experiencing some emotion. A scheme of tcmperament assossmin ${ }^{\dagger}$ which is at all adequate must take 011 these aspects of emotionality into account.

Reviewing the experimental results wa find the

## following:

(1) The Prelininary Investigation. There were two factors (Factor A in the first and alternate rotations) designated Emotionally Stable which had in common adjustive responses combined with a positive affect tone denoted by agreeableness and friendliness. ${ }^{1}$ Thare was also a factor (Factor D) designated Emotionally Unstable characterised by non-adjustive responses combined with thinking introversion and a negative affeot tone denoted by depression. ${ }^{2}$
(2) The Experimente Regults (Positive Pole). Factor B from the positive pole was very similar to Factor A above. It was also characterised by adjustive responses and a positive affect
tone and was designated Einotionally Stable. 1 Factor 0 from the pozitive pole was a sompound designated Primary Function and Emotionally Unstable. ${ }^{2}$
(3) The Experimental Results (Negative Pole). There
a as ro emotionality fractor complementary to the one from the positive polo matrix (i.e, which had similar loadings on the same variables) as there was for the Function and Activity factors. In other words, there was no omotionality factor with loadings on a combination of behaviour characteristics such as Depressed, Moody, Bmotionally Unstable, Disagreeable and High-strung, which woulà have been similar to the Enotionally Unstable factor in the Preliminary Investigation. There is, however, a factor (Factor A) which is charaoterised by emotional adjustment with placidity and no affect, ${ }^{3}$

It seems a reasonable conclusion that it would not be meeningful to describe emotionality in terms of a variation fyom positive affect tone to negative affect tone which would have been indicated had we obtained complementary factors including positive and negative affect respectively from the positive and negative pole matrices. It seems more feasible that the opposite pole of the continua for both positive and negaiive affect would be no affeot. Such a rating soale could be represented diagrammatically as follows: Figure VI.


Such a schome would not be at variance with psychoiogical theory or with the results of this investigation. Certainly the experimental evidence in this investigation is not conclusive in this rospect, but doos allow of this scheze boing advareed as a reesonnblo hypothesis.

1 Chapter VI, $\mathrm{p}_{0} 97$
2 Chapter VI, p. 98
3 Chaspter VII, p. 114

## 118.

is usually associated with adjustzent, negative affect with maladjusiment and inhibited emotionality with agikatied maladjustment, thus the axis XYZ may be a variation in the adjusiment of erotional responses.

It is difficult to conceive of responses which are not eccomparied by any sort of affect tone (i,e, where there is complete placidi+y) as being other than adjustive. There would, therefore, be no adjustment continuum for responses with no affeot, which would have been indicated by a vertical axis through $Q$ in the diagram.

These kypotheses should be tested in a ne'd factorial study constructed specifically to cover the area of emotional and non-emotional behaviour responses.

The remaining factors from the negative pole matrix are not partioularly interesting. Factor $D$ has a high positive loading of . 72 on 1 (Disagroeable) and .64 on 3 (Unco-operative), combjned with smaller negative loadings of -.36 on 4 (Indecisiva) and -.29 on 18 (Lacking in Confidence). This is a fairly common type of porsonality development. It describes the individuel who is deaisive and eonfident and who wi11 et his own way to the point of disagreeableness and unco-operativenoss. There is no curroborative evidence for this factor from the previous matrix and is can only be tentatively designated as Domineering.

The last factor, Fector F, is a doublet with only two high loadings, these are positive loadings of .63 on 2 (Depressed) and . 61 on 9 (Moody). These two traits do not appear in any of the other factors. Doublets are factorially indeterminate and all that can be said is that traits 2 and 9 have 0.11 their variance in corruon.

Tho correlations between tho primary factors were oaloulated as shown in the provious chapter and are given overleaf

Table XXXVI.
Correlations :etween the Primary Factors.

|  | Adjustment with No Affect $\qquad$ | Secon- <br> dary <br> Function <br> $B$ | $\left\lvert\, \begin{gathered} \text { Aotivity } \\ C \end{gathered}\right.$ | Domineering D | $\begin{array}{\|c\|} \text { Compen- } \\ \text { sation } \\ \text { Activity } \\ \hline \end{array}$ | Depressea <br> and <br> Moody |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Adjustment with $N_{0}$ Affect | 1.000 |  |  |  |  |  |
| $\begin{aligned} & \text { Socondary B } \\ & \text { Function } \end{aligned}$ | . 645 | 1.000 |  |  |  |  |
| Activity c | . 217 | . 263 | 1.000 |  |  |  |
| Dous noering D | -. 450 | -. 323 | . 042 | 2.000 |  |  |
| Compen-  <br> sation E <br> Activity  | -. 455 | -. 151 | -. 190 | . 114 | 1.000 |  |
| $\begin{array}{ll} \hline \text { Depressed } & \\ \text { and } & \text { F } \\ \text { Mondy } & \\ \hline \end{array}$ | -. 621 | -. 571 | -. 247 | . 410 | . 221 | 1.000 |

These correlations are logicel in the light of the interpretation of the festors. Factor A (Adjustment with No Affect) has positive correlations of .645 with 3econdary Funotion and . 217 with Activity. This is satisfactory since Secondary Function on Heymans ' view is negatively associated with Emotionality ${ }^{1}$ or affect and because other things being equal, Secondary Function facilitates adjustment, Activity, too, facilitates adjustment and counteracts emotional complexity. One might, in fact, have expected a higher correlation with the $\Lambda$ notivity Factor. Factor A has a negative correlation if -. 450 with Domineering which is only to be expected since the Domineering faitor has loadings on such behaviour traits as Disagreeable and Unco-operative. ${ }^{2}$ It has a negative correlation of $\mathbf{- . . 4 5 5}$ with Factor $\mathbb{E}$ which is described as Compensatinn Activity. In a disoussion of this factor it was suggested that this aotivity stemmed from anxiety and maladjustment ${ }^{3}$ and one would, therefore,

1 Chapter VI, p. 100
2 Chapter VII, p. 118
3 Chapter VII, p. 113
expect a negative cormelation with an edjustment factor such as Factor A. Factor A had a large negative ccrrelation of -.624 with the doublet Depressed and Moody which requires no further explanation.

Factor B (Securdary Function) has a positive cor, olation of .263 with the Aotivity factor. This assooiation was found between these factors from the positive pole matrix and has also been mentioned by both Heymans and Biesheuvel. Heymans also considered that Secondary Function was negatively associated with Emotionality and Factor B has negative correlations of -.323 and -. 571 with the Domineering and Depressed and Moody factors respectively which both inclide negatire affect.

Factor C (Activity) has also a negative correlation of -. 247 with Deprossed and Moody which is quite logical and a smaller negative correlation of -.190 with Factor E (Corapensation Activity) which is due to the maladjustive elements in this factor. This correlation emphasises the difference in these Activity factors. Factor $C$ has a low correlation of .041 with Domineering and there is no reason why it should be either positively or negatively associated with this fac or.

As is to be expocted Domineering (which includes negative affect) has a large positive correlation of .410 with Depressed and Moody, and Depressed and Moody has also a positive correlation of . 221 with Compensation Activity which may be dus to the maladjustive elemerits in the latter or to its emotional colouring which is indicated by a negative loading of -.37 on Indifferent. As a check on the rocations for the negative pole matrix the writer sent the graphs for the final $V$ matrix to the Psychometric Laboratory at the University of Chicago which is under the direction of L.L. Thurstone. It was considered there that the struoture was adequate but that it might be improved by the extraction of soine additional factors since the writer's sixth factor
residuals were slightly high. Accordingly two extra factors were extracted by a worker in the Psychometric Laboratory, the orthogonal factor matrix used by the writer was thus increased by two columns and is shein in Table XXXVII. The eighth factor residuals are given in Tablo XXXVIII.

Tho rotations were continued and the final transformation matrix and oblique factor matrix are given in Tables XXXIX and XL respectively. The rotations dono i it the Psychomotricu Laboratory are in no way indepondent of the work done by the writer but a continuation of it done with the writer's consent. It will be seen that the extraction of two additional factors did not materially affect the interpretation of the writer's factors, nor was it necessary to introduce new concepts for the interpretation of the additional factors.

## Table XXXVVII.

Orthogonal Factor Matrix F.

|  | I | II | III | IV | V | VI | VIY | VIII |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | -. 38 | . 51 | . 34 | . 27 | -. 12 | -. 33 | -. 12 | . 20 |
| 2 | -. 50 | . 33 | -. 12 | . 32 | . 29 | . 32 | -. 06 | -. 06 |
| 3 | -. 30 | . 45 | . 34 | . 10 | -. 21 | -. 33 | -. 15 | . 18 |
| 4 | -. 38 | -. 50 | -. 34 | -. 21 | -. 08 | . 02 | . 14 | . 07 |
| 5 | . 67 | . 24 | -. 18 | -. 18 | -. 05 | . 08 | -. 08 | . 14 |
| 6 | -. 77 | . 16 | -. 09 | . 05 | -. 15 | . 16 | . 16 | -. 11 |
| 7 | . 10 | -. 49 | . 12 | . 05 | . 27 | . 06 | -. 20 | . 19 |
| 8 | . 41 | . 16 | . 56 | -. 26 | -. 17 | . 07 | . 15 | . 19 |
| 9 | -. 57 | . 26 | . 15 | . 22 | . 24 | . 40 | 8 | -. -.18 |
| 10 | . 53 | . 21 | -. 24 | . 33 | -. 12 | -. 14 | . 07 | -. 18 |
| 11 | . 68 | -. 39 | . 20 | . 11 | . 29 | -. 14 | , | . 10 |
| 12 | . 64 | -. 06 | -. 30 | . 21 | -.32 | . 04 | . 13 | . 10 |
| 13 | . 65 | -. 26 | . 11 | . 24 | . 07 | -. 09 | . 22 | -. 09 |
| 14 | -. 63 | -. 18 | . 25 | -. 11 | . 08 | -. 10 | -. 15 | -. 10 |
| 15 | -. 32 | -. 54 | . 28 | -. 18 | -. 09 | . 13 | -. 11 | -. 08 |
| 16 | . 19 | -. 45 | $\cdots$ | .19 | -. 04 | -. 02 | -. -.07 | -. 18 |
| 17 | . 23 | . 50 | -. 26 | -. 16 | . 25 | -. 10 | -. 16 | . 21 |
| 18 | -. 47 | -. 18 | -. 60 | -11 | - | -. 33 | . 11 | . 13 |
| 19 | -. 25 | . 21 | -. 54 | -. 20 | . 20 | -. 33 | -. 12 | -. 22 |
| 20 | -. 46 | -. 42 | . 35 | -. 14 |  | 2 | . 19 | -. 10 |
| 21 | . 50 | . 31 | . 18 | -. 30 |  | . 05 | -. 25 | . 10 |
| 22 | . 55 | . 46 | -. 11 | -. 21 |  |  |  |  |

Table XXXVIII.
Frequency Distribution of the Eighth Factor Residuals.

| Residual | Frequency |  |
| :---: | :---: | :---: |
| -.10 | 2 |  |
| -.09 | 8 |  |
| -.08 | 2 |  |
| -.07 | 2 |  |
| -.06 | 12 |  |
| .05 | 22 |  |
| .04 | 41 |  |
| -.03 | 56 |  |
| -.02 | 78 |  |
| -.01 | 74 |  |
| .00 | 70 |  |
| .01 | 36 |  |
| .02 | 30 |  |
| .03 | 16 |  |
| .04 | 6 | $N=462$ |

Table XXXIX.
Transformation Matrix $\wedge$.

|  | A | B | C | D | E | F | G | H |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| I | .21 | .21 | .03 | -.14 | -.09 | -.06 | .21 | .04 |
| II | -.17 | .18 | .22 | .23 | .11 | .31 | .11 | .26 |
| III | .27 | -.39 | .26 | .43 | -.32 | -.02 | -.12 | -.26 |
| IV | .24 | .60 | -.52 | .37 | -.14 | .46 | -.09 | -.01 |
| VI | -.76 | -.48 | -.25 | .04 | .22 | .44 | .28 | .24 |
| VII | .16 | .31 | .05 | -.67 | -.12 | .58 | .24 | -.49 |
| VIII | .38 | .14 | .03 | -.33 | .60 | .27 | -.63 | .03 |
|  |  |  |  |  |  | .28 | .63 | -.75 |

Table XL.
Oblique Factor Matrix V.

|  |  |  |  |  |  | F | G | H |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ${ }^{\text {A }}$ | B | $\begin{gathered} c \\ -.02 \end{gathered}$ | $\begin{gathered} D \\ .70 \end{gathered}$ | . 02 | . 08 | . 00 | 01 |
| 1 | . 03 |  |  | . 01 | . 02 | . 55 | . 07 | . 05 |
| 2 | . 00 | . 02 | -. 24 | . 62 | -. 02 | -. 08 | . 00 | -. 01 |
| 3 | -. 06 | -. 04 | . 05 | . 62 | -. 23 | -. 18 | -. 13 | -. 13 |
| 4 | -. 15 | -. 08 | . 02 | -. -18 | . 07 | . 00 | . 34 | -. 02 |
| 5 | . 00 | . 21 | . 07 | -. -.18 | . 08 | . 16 | -. 31 | . 00 |
| 6 | -. 36 | . 02 | . 12 | -.,06 | -. 0 | . 02 | . 28 | -. 26 |
| 7 | . 38 | -. 24 | -. 30 | . 02 | -. 01 | -. 04 | . 05 | -,29 |
| 8 | . 10 | -. 06 | . 48 | . 02 | -.02 | . 54 | -. 08 | -. 05 |
| 9 | . 00 | -. 09 | -. 02 | -. 02 | -.,02 | . 00 | , | . 28 |
| 10 | -. 01 | . 49 | -. 12 | , 0 | -, 0 | . 00 | . 05 | -. 03 |
| 11 | . 59 | . 01 | -. 03 | . 21 | . 04 | ..01 | . 04 | -. 07 |
| 12 | -. 08 | . 61 | . 00 | -. 01 | -. 05 | . 00 | -. 12 | . 06 |
| 13 | . 34 | . 25 | - 07 | . 21 | -. 15 | -. 16 | -. 14 | . 00 |
| 14 | -. 04 | -. 47 | -. 07 | . 21 | -. 15 | -. 21 | -. 02 | . 36 |
| 15 | -. 03 | -. 36 | 01 | -. 01 | -. 30 | -. 18 | . 08 | . 05 |
| 16 | . 05 | . 00 | . 3 | . 01 | . 05 | . 00 | . 10 | . 48 |
| 17 | . 00 | -. 03 | . 00 | . 03 | . 50 | . 07 | . 02 | . 00 |
| 18 | -. 02 | . 02 | -. 06 | -. 24 | . 47 | -. 04 | . 04 | . 30 |
| 19 | . 01 | -. 01 | . 02 | . 0 | . 35 | -. 28 | -. 25 | -. 11 |
| 20 | -. 18 | . 41 | . 00 |  | -. 01 | . 07 | . 00 | . 02 |
| 21 | -. 04 | . 03 |  |  | -. 04 | . 00 | . 48 | . 04 |
| 22 | . 00 | .00 | -.,06 |  |  |  |  |  |

The factors resulting from those additional rotations do not require a separate interpretation. For the convenience of the reader the highest loadings of the factors obtained by the writer and those obtained in the Psychometric Laboratory w111 be set out in comparable pairs.

| Faotor A (Negative Pole) |  |  | Factor A ( $\begin{aligned} & \text { Negative Pole } \\ & \text { Psych. Lab. }\end{aligned}$ |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Code | Trait | Lnading | Code | Trait | Loading |
| 11 | Plaoid | +. 57 | 11 | Placid | +. 59 |
| 7 | Lethargio | +. 36 | 7 | Lethargic | +. 38 |
| 13 | Sedate | +. 33 | 13 | Sedate | +. 34 |
| 6 | Emotionally Unstable | $-.37$ | 6 | Enotionally Unstable | -. 36 |

This factor was designated Adjustment with No Affect.

| Code | Trait | Loading | Code Number | Trait | Loadir. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Number | Cautious | +. 56 | 12 | Cautious | +. 61 |
| 10 | Serious | +. 51 | 10 | Serious | +. 49 |
| 5 | Undemonstrative | +. 25 | 5 | Uidemenstrative | +.21 |
| 13 | Sedate | +.14 | 13 | Sedate | +.25 |
| 14 | Quitter | -. 45 | 14 | Quitter | -. 4 |
| 20 | Spasmodic Worker | -. 42 | 20 | Spasmodic Worker | . .36 |
| 15 | Procrastinator | -. 42 | 15 | Procrastinator | . 36 |

This feotre was derignated Secondary Function.

Factor $C$ obtained by the writer appears to have been splí. into cwe factors in the Psychometric Laboraciory rotation - into their. Tow and their Factor $G$ which was an additionsl factor exfractbl by the:

| Code | Trait L | Loading |
| :---: | :---: | :---: |
| Number | Detached | +. 64 |
| 22 | Uncoranunicative | +. 63 |
| 5 | Undemonstrative | 9 |
| 8 | Indifferent |  |
| 27 | Avoids Company |  |
| 4 | Indecisive |  |
| 18 | Lacking in Gonfidence | - $\begin{array}{r}\text { - } \\ -.33\end{array}$ |
| 16 | Siow Worker | -. 32 |
| 20 | Spasmodic Worker | -. 30 |
| 15 | Procrastinator | -. 27 |
| 14 | Quitter | -. .21 |
| 7 | Lethargic |  |
|  | Emotionally | -. 22 |

Author Baehr Melany Erna
Name of thesis An Investigation Into The Determinants Of Temperament. 1987

## PUBLISHER:

University of the Witwatersrand, Johannesburg
© 2013

## LEGAL NOTICES:

Copyright Notice: All materials on the University of the Witwatersrand, Johannesburg Library website are protected by South African copyright law and may not be distributed, transmitted, displayed, or otherwise published in any format, without the prior written permission of the copyright owner.

Disclaimer and Terms of Use: Provided that you maintain all copyright and other notices contained therein, you may download material (one machine readable copy and one print copy per page) for your personal and/or educational non-commercial use only.

The University of the Witwatersrand, Johannesburg, is not responsible for any errors or omissions and excludes any and all liability for any errors in or omissions from the information on the Library website.


[^0]:    I Ghapter VI, p. 39

