Chapter 4

ANALYSIS & INTERPRETATION OF DATA

Introduction

The research work is not completed merely by the collection of the data, in fact analysis and interpretation of data is also an important step of research work.

“Tabulation is simply the recording of the number of the types of responses in the appropriate categories.”

It is truism and weighty statement that the raw scores hardly carry any significant results unless they are interpreted and generalized in a proper way. The objective of the investigator remains unrealized without the interpretation and the analysis of the bars facts and material collected through the tools used for the study. Since it is only through generalization and interpretation that the researcher can reach certain conclusion, the objective of the chapter is the analysis of the data, which implies the study of the tabulated material in order to determine the inherent factors or meaning. It no doubt helps in breaking down the existing complex factors into simple parts and puts the part together in new arrangement for the purpose of interpretation.

S.P. Sukhia

After data is processed it has to be analyzed for testing the significance of the hypothesis framed. Analysis is a process enters into research in one form or the other, from the very beginning in the selection of the problem, in the determination of methods and in interpreting and drawing conclusions from data gathered. Analysis of data means studying the organized material in order to discover inherent facts. The data are studied from as many angles as possible to explore the few facts. Analysis requires an alert, flexible and open mind. It is worthwhile to prepare plan of analysis before the actual collection of data. Good, Barr and Scates (1941) suggest four helpful modes to get started on analyzing the gathered data.

- To think in terms of significant tables that the data permit.
- To examine carefully the statement of the problem and earlier analysis and to study the original records of the data.
➢ To get away from the data and to think about the problem in layman’s terms, or to actually discuss that problem with others.

➢ To attack the data by making various statistical calculations.

Interpretation is the final phase of the analysis process. According to Carter, V. Good, A.S. Barr and Douglas. E. Ecates, the process of interpretation is essentially one of stating what the results show, what they mean, what their significance is and what the answer to the original problem is. Interpretation is thus by no means a mechanical process. It calls for a critical examination of the results of one’s analysis in the light of all the limitations of data gathering. It is the most important step in the total procedure of research. The analysis and interpretation of data both together represent the application of inductive and deductive logic to the research process. The data are first classified by division into subgroup and are then analyzed and synthesized in such a way that hypothesis may be verified or rejected. The final result may be a new principle or generalization.

Interpretation of the qualitative data is more dependent on the researcher’s research skills, research background, intelligence, creativity and biases.

Need of Interpretation

It is through interpretation that the researcher can well understand the abstract principle that works beneath his findings. Interpretation leads to the establishment of explanatory concepts that can serve as a guide for future research studies.

Research can better appreciate only through interpretation what are his findings and can make others to understand the real significance of his research findings.

The interpretation of the finding of exploratory research study often results into hypothesis for experimental research.

Technique of interpretation

The technique of interpretation often involves the following steps:
(i) Researcher must give reasonable explanations of the relations, which he has found, and he must interpret the lines of relationship in terms of the underlying processes.

(ii) Extraneous information must be considered while interpretation the final results of research study it may prove to be a key factor in understanding the problem under consideration.

(iii) It is advisable before reaching upon final interpretation to consult expert someone, which will lead to a result in correct interpretation and thus will enhance the utility of research results.

(iv) Researcher must accomplish the task of interpretation only after considering all relevant factors affecting the problem to avoid false generalization.

Classification

Most research studies result in a large volume of raw data which must be reduced into homogenous group, if we are to get meaningful relationships. This fact necessitates classification of data which happens to be the process of arranging data in groups or classes on the basis of common characteristics. Data having common characteristics are placed in one class and in this way the entire data get divided into a number of groups or classes.

Classification of the Sample

In the present study, the investigator has taken a sample of 600 children. 300 children of working mothers and 300 children of non-working mothers. An aggregate of 150 male children of working mothers and their 150 female children as well as 150 male children of non working mothers and their 150 female children were surveyed.

The personality traits of these children were studied by employing IEI by Dr. P.F. Aziz and Rekha Agnihotri. Then she computed the mean standard Deviation (S.D.) and correlation coefficient of each grouping order to know the relationship of differences among adolescence of working and non-working mothers. Does the employment of the mother depict upon the
personality development of her child? Whether the maternal deprivation affects the personality of the child in any way? Let us interpret and generalize all the details by Tabulation.

Mean, S.D. and correlation coefficient of the two populations namely children of working mothers and children of non-working mothers have been persisted separately in the tables.

When a mass of data has been assembled, it becomes necessary for the researcher to arrange the same in some kind of concise and logical order. This procedure is referred to as tabulation. Thus, tabulation is the process of summarizing raw data and displaying the same in compact form for further analysis. In a broader sense, tabulation is an orderly arrangement of data in columns and rows.

**Tabulation is essential because of the following reasons:**

1. It conserves space and reduces explanatory and descriptive statement to a minimum.
2. It facilities the summation of items and the detection of errors and omissions.
3. It facilities the process of comparison.
4. It provides a basis for various statistical computations.

**Hypothesis-1 Table Showing Personality Patterns of 600 Children of working and non-working mothers under Study**

<table>
<thead>
<tr>
<th></th>
<th>Extrovert</th>
<th>Introvert</th>
<th>Ambivert</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Working Mothers</strong></td>
<td>272</td>
<td>28</td>
<td>0</td>
<td>300</td>
</tr>
</tbody>
</table>
Table 7

Table 1 depicts the results of the survey conducted among children of working and non-working mothers. The children were surveyed from the earlier mentioned schools and the data is tabulated as above. Out of 600 children under study, a total of 489 were found to be Extrovert whereas 96 were observed as Introverts and 15 children were observed as Ambivert after application of the scoring technique on the data collected.

In pursuance of the test of hypothesis under study, the calculations were performed as under:-

**Mean (M):**

\[
\frac{\sum X}{N}
\]

\[\sum X = 489 + 96 + 15 = 600\]

\[N = 3\]

\[M = \frac{600}{3} = 200.\]

**Standard deviation:**
Computation of standard deviation of the data has been made as follows:-

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>D</th>
<th>d2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroverts</td>
<td>489</td>
<td>289</td>
<td>83521</td>
</tr>
<tr>
<td>Introverts</td>
<td>96</td>
<td>-104</td>
<td>10816</td>
</tr>
<tr>
<td>Ambiverts</td>
<td>15</td>
<td>-185</td>
<td>34225</td>
</tr>
<tr>
<td>Total</td>
<td>600</td>
<td>0</td>
<td>128562</td>
</tr>
</tbody>
</table>

Table-8

Where,

Mean = 600/3 = 200.

d = deviation of particular observation from mean.
d2 = Square of deviations of particular observations from mean score.

N = 600.

\[ \sum d^2 = 128562. \]

S.D. = \[ \sqrt{\sum d^2 / N} \]

S.D. = \[ \sqrt{128562/600} \]

S.D. = 14.63

Correlation Coefficient:-

The correlation coefficient has been calculated as under:-
<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>X</th>
<th>x²</th>
<th>Y</th>
<th>y</th>
<th>y²</th>
<th>x.y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extrovert</td>
<td>272</td>
<td>172</td>
<td>29584</td>
<td>217</td>
<td>117</td>
<td>13689</td>
<td>20124</td>
</tr>
<tr>
<td>Introvert</td>
<td>28</td>
<td>-72</td>
<td>5184</td>
<td>68</td>
<td>-32</td>
<td>1024</td>
<td>2304</td>
</tr>
<tr>
<td>Ambivert</td>
<td>0</td>
<td>-100</td>
<td>10000</td>
<td>15</td>
<td>-85</td>
<td>7225</td>
<td>8500</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>0</td>
<td>44768</td>
<td>300</td>
<td>0</td>
<td>21938</td>
<td>30928</td>
</tr>
</tbody>
</table>

**Table-9**

Where,

$X =$ Children of working mothers.

$Y =$ Children of non working mothers.

$\text{Mean}(X) = 300/3 = 100.$

$\text{Mean}(Y) = 300/3 = 100.$

$x =$ deviations of a particular observation (children of working mothers) from its mean score.

$x²$ & $y² =$ square of deviations.

$y =$ deviations of a particular observation (children of non working mothers) from its mean score.

$x.y =$ product of deviations of variables of the problem.

$\sum x.y. =$ sum of product of deviations of variables of the problem.

$\sum x² =$ summation of squares of deviations of variable $X$.

$\sum y² =$ summation of squares of deviations of variable $Y$.

$r \ xy = \frac{\sum x.y.}{\sum x² \times \sum y²}$
\[ \sqrt{\sum x^2 \cdot \sum y^2} \]

\[ = 30928 \]

\[ \frac{\sqrt{44768.21938}}{} = +0.98689 \]

**Personality Traits of 600 children of working and non-working mothers**

- **Mean** = 200
- **S.D.** = 14.63
- **r** = +0.98689

**Diagam - 1**

**Percentage Calculation:**

The percentage of a particular object (personality trait) to the total no. of observations (N) is computed as under:
Observations of a particular object
------------------------------------------------ * 100

Total No. of observations i.e. N

Therefore,

N=600, Extroverts = 489, Introverts = 96, Ambiverts = 15

**Extroverts** = \(\frac{489}{600} \times 100\)

= 81.5%

**Introverts** = \(\frac{96}{600} \times 100\)

= 16%

**Ambiverts** = \(\frac{15}{600} \times 100\)

= 2.5%

Chart Showing Personality Patterns of 600 Children of working and non- working mothers under Study

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**Graph -1**

Percentage of personality traits of 300 children of working mothers
N=300, Extroverts= 272, Introverts = 28, Ambiverts = Nil

**Extroverts** = \((272/300) \times 100\)

= 90.67%

**Introverts** = \((28/300) \times 100\)

= 9.33%

**Ambiverts** = Nil

Chart Showing Personality Patterns of 300 Children of working mothers under Study

Percentage of personality traits of 300 children of non working mothers

N=300, Extroverts= 217, Introverts = 68, Ambiverts = 15

Graph -2
**Extroverts** = \( \frac{217}{300} \times 100 \)

\[= 72.33\% \]

**Introverts** = \( \frac{68}{300} \times 100 \)

\[= 22.67\% \]

**Ambiverts** = \( \frac{15}{300} \times 100 \)

\[= 5\% \]

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**Chart Showing Personality Patterns of 300 Children of non working mothers under Study**

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**CONCLUSION**

The mean and standard deviation of the data is calculated as 200 & 14.63 which supports our hypothesis. The correlation coefficient is found as +0.98689 which is almost near to perfect correlation which advocates our hypothesis that there is no significant difference in the personality attributes of children of working and non-working mothers. 81.5% of the children were found to be extroverts where as the respective percentage of introversion and Ambiversion was very low among children of working and non- working mothers. It was found to be as 16% n
2.5% respectively. The percentage ratio is a positive evidence for acceptance of the hypothesis under study.

Hypothesis 2:-

Table showing Personality Attributes of Children of Working Mothers under study

<table>
<thead>
<tr>
<th></th>
<th>Extrovert</th>
<th>Introvert</th>
<th>Ambivert</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male children</td>
<td>137</td>
<td>13</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>Female children</td>
<td>135</td>
<td>15</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>Total</td>
<td>272</td>
<td>28</td>
<td>0</td>
<td>300</td>
</tr>
</tbody>
</table>

Table-9

Table 2 depicts the results of the survey conducted among children of working mothers. The children were surveyed from the earlier mentioned schools and the data is tabulated as above. Out of 300 male and female children under study, a total of 272 were found to be Extrovert whereas 28 were observed as Introverts and not a single child was observed as Ambivert after application of the scoring technique on the data so collected during the survey.
In pursuance of the test of hypothesis under study, the calculations were performed as under:-

**Mean (M):**

\[
\frac{\sum X}{N}
\]

\[
\sum X = 272 + 28 + 0 = 300
\]

\[
N = 3
\]

\[
M = \frac{300}{3} = 100.
\]

\[
M (\text{Male children of working mothers}) = \frac{137 + 13 + 0}{3} = 50
\]

\[
M (\text{Female children of working mothers}) = \frac{135 + 15 + 0}{3} = 50
\]

**Standard deviation:**

Computation of standard deviation of the data has been made as follows:-

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>D</th>
<th>d²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroverts</td>
<td>272</td>
<td>172</td>
<td>29584</td>
</tr>
<tr>
<td>Introverts</td>
<td>28</td>
<td>-72</td>
<td>5184</td>
</tr>
<tr>
<td>Ambiverts</td>
<td>0</td>
<td>-100</td>
<td>10000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>300</td>
<td>0</td>
<td>44768</td>
</tr>
</tbody>
</table>

Table – 10

Where,
Mean $= \frac{300}{3} = 100$.

d = deviation of particular observation from mean.

d2 = Square of deviations of particular observations from mean score.

$N = 300$.

$\sum d^2 = 44768$.

$S.D. = \sqrt{\frac{\sum d^2}{N}}$

$S.D. = \sqrt{\frac{44768}{300}}$

$S.D. = 12.21$

**S.D. for Male children of working mothers:**

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>D</th>
<th>d2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroverts</td>
<td>137</td>
<td>87</td>
<td>7569</td>
</tr>
<tr>
<td>Introverts</td>
<td>13</td>
<td>-37</td>
<td>1369</td>
</tr>
<tr>
<td>Ambiverts</td>
<td>0</td>
<td>-50</td>
<td>2500</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>0</td>
<td>11438</td>
</tr>
</tbody>
</table>

Table -11

Where,

Mean $= \frac{150}{3} = 50$.

d = deviation of particular observation from mean.

d2 = Square of deviations of particular observations from mean score.

$N = 150$. 
\[ \Sigma d^2 = 11438. \]

S.D. = \( \sqrt{\frac{\Sigma d^2}{N}} \)

\[ \text{S.D.} = \sqrt{\frac{11438}{150}}\]

\[ \text{S.D.} = 8.73 \]

**S.D. for Female children of working mothers:**

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>D</th>
<th>d^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroverts</td>
<td>135</td>
<td>85</td>
<td>7225</td>
</tr>
<tr>
<td>Introverts</td>
<td>15</td>
<td>-35</td>
<td>1225</td>
</tr>
<tr>
<td>Ambiverts</td>
<td>0</td>
<td>-50</td>
<td>2500</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>0</td>
<td>10950</td>
</tr>
</tbody>
</table>

**Table - 12**

Where,

**Mean=** \( \frac{150}{3} = 50. \)

\( d = \) deviation of particular observation from mean.

\( d^2 = \) Square of deviations of particular observations from mean score.

\( N = 150. \)

\[ \Sigma d^2 = 10950. \]

S.D. = \( \sqrt{\frac{\Sigma d^2}{N}} \)
S.D. = \sqrt{\frac{10950}{150}}

S.D. = 8.544

**Correlation coefficient:**

The correlation coefficient has been calculated as under:

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>X</th>
<th>x²</th>
<th>Y</th>
<th>y</th>
<th>y²</th>
<th>x.y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extrovert</td>
<td>137</td>
<td>87</td>
<td>7569</td>
<td>135</td>
<td>85</td>
<td>7225</td>
<td>7395</td>
</tr>
<tr>
<td>Introvert</td>
<td>13</td>
<td>-37</td>
<td>1369</td>
<td>15</td>
<td>-35</td>
<td>1225</td>
<td>1295</td>
</tr>
<tr>
<td>Ambivert</td>
<td>0</td>
<td>-50</td>
<td>2500</td>
<td>0</td>
<td>-50</td>
<td>2500</td>
<td>2500</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>0</td>
<td>11438</td>
<td>150</td>
<td>0</td>
<td>10950</td>
<td>11190</td>
</tr>
</tbody>
</table>

**Table - 13**

Where,

X = Male Children of working mothers.

Y = Female Children of working mothers.

Mean(X) = \frac{150}{3} = 50.

Mean(Y) = \frac{150}{3} = 50.

x = deviations of a particular observation (male children of working mothers) from its mean score.

x² & y² = square of deviations.

y = deviations of a particular observation (female children of working mothers) from its mean score.
\[ x \cdot y = \text{product of deviations of variables of the problem.} \]

\[ \sum x \cdot y = \text{sum of product of deviations of variables of the problem.} \]

\[ \sum x^2 = \text{summation of squares of deviations of variable } X. \]

\[ \sum y^2 = \text{summation of squares of deviations of variable } Y. \]

\[
\begin{align*}
 r_{xy} &= \sum x \cdot y \\
        &= \frac{11190}{\sqrt{11438.10950}} \\
        &= +0.9998
\end{align*}
\]

**Personality Traits of 300 children of working mothers**

- Mean = 100
- S.D. = 12.21
- \( r = +0.9998 \)

Diagram - 2

**Percentage Calculation:**
The percentage of a particular object (personality trait) to the total no. of observations (N) is computed as under:

Observations of a particular object
------------------------------------------- * 100

Total No. of observations i.e. N

Therefore,

Percentage of personality patterns of children of working mothers:
N=300, Extroverts = 272, Introverts = 28, Ambiverts = Nil

**Extroverts** = (272/300) * 100
= 90.67%

**Introverts** = (28/300) * 100
= 9.33%

**Ambiverts** = Nil
Chart Showing Personality Patterns of 300 Children of working mothers under Study

Graph - 3

Percentage of personality traits of male children of working mothers to total no. of male children of working mothers under study:

N=150, Extroverts= 137, Introverts = 13, Ambiverts = Nil

*Extroverts* = \( \frac{137}{150} \times 100 \)

= 91.33%

*Introverts* = \( \frac{16}{150} \times 100 \)

= 8.67%

*Ambiverts* = Nil
Chart Showing Personality Patterns of 150 Male Children of working mothers under Study

Graph - 4

Percentage of personality traits of female children of working mothers to total no. of female children of working mothers under study:-

N=150, Extroverts= 135, Introverts = 15, Ambiverts = Nil

**Extroverts** = \((135/150) \times 100\)  
= 90%

**Introverts** = \((15/150) \times 100\)  
= 10%

**Ambiverts** = Nil
Chart Showing Personality Patterns of 150 Female Children of working mothers under Study

**Conclusion**

The second table shows the results of the survey about personality traits of children of working mothers. The survey was conducted on 300 male and female children of working mothers studying in both government as well as private schools and the results were derived as under:-

The mean score of male children of working mothers is computed as 50 and the mean score of female children of working mothers is also found to be 50 which do favor our hypothesis and states the fact that there is no significant difference in the personality traits of children of working mothers.

The standard deviation was calculated as 8.73 & 8.544 respectively. The correlation coefficient was also found as +0.9998 which is almost perfect positive correlation and is a proof to hold the hypothesis under study as true.
90.67% children of working mothers were found as extroverts where as the percentage of introvert children was quite low i.e. 9.33% only and no child was found as ambivert.

**Hypothesis 3**

**Table showing Personality Attributes of Children of Non-Working Mothers**

<table>
<thead>
<tr>
<th></th>
<th>Extrovert</th>
<th>Introvert</th>
<th>Ambivert</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>97</td>
<td>53</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>120</td>
<td>15</td>
<td>15</td>
<td>150</td>
</tr>
<tr>
<td>children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>217</td>
<td>68</td>
<td>15</td>
<td>300</td>
</tr>
</tbody>
</table>

**Table-14**

Table 3 depicts the results of the survey conducted among children of non working mothers. The children were surveyed from the earlier mentioned schools and the data is tabulated as above. Out of 300 male and female children under study, a total of 217 were found to be Extrovert whereas 68 were observed as Introverts and 15 children were observed as Ambivert after application of the scoring technique on the data so collected during the survey.

In pursuance of the test of hypothesis under study, the calculations were performed as under:-

**Mean (M):**

\[
\frac{\sum X}{N} = \frac{217+68+15}{3} = \frac{300}{3} = 100.
\]
M (Male children of non working mothers) = (97+53+0)/3 = 50

M (Female children of non working mothers) = (120+15+15)/3 = 50

**Standard deviation:-**

Computation of standard deviation of the data has been made as follows:-

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>D</th>
<th>d2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroverts</td>
<td>217</td>
<td>117</td>
<td>13689</td>
</tr>
<tr>
<td>Introverts</td>
<td>68</td>
<td>-32</td>
<td>1024</td>
</tr>
<tr>
<td>Ambiverts</td>
<td>15</td>
<td>-85</td>
<td>7225</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>0</td>
<td>21938</td>
</tr>
</tbody>
</table>

**Table - 15**

Where,

Mean = 300/3 = 100.

d = deviation of particular observation from mean.

d2 = Square of deviations of particular observations from mean score.

N = 300.

\[ \sum d^2 = 21938. \]

\[ S.D. = \sqrt{\frac{\sum d^2}{N}} \]

\[ S.D. = \sqrt{\frac{21938}{300}} \]

\[ S.D. = 8.55 \]

**S.D. for Male children of non working mothers:**

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>D</th>
<th>d2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroverts</td>
<td>97</td>
<td>47</td>
<td>2209</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>D</td>
<td>d2</td>
</tr>
<tr>
<td>----------------</td>
<td>-----</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td>Extroverts</td>
<td>120</td>
<td>70</td>
<td>4900</td>
</tr>
<tr>
<td>Introverts</td>
<td>15</td>
<td>-35</td>
<td>1225</td>
</tr>
<tr>
<td>Ambiverts</td>
<td>15</td>
<td>-35</td>
<td>1225</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>0</td>
<td>7350</td>
</tr>
</tbody>
</table>

Table – 17

Where,

Mean = 150/3 = 50.

S.D. for Female children of working mothers:

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>D</th>
<th>d2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroverts</td>
<td>120</td>
<td>70</td>
<td>4900</td>
</tr>
<tr>
<td>Introverts</td>
<td>15</td>
<td>-35</td>
<td>1225</td>
</tr>
<tr>
<td>Ambiverts</td>
<td>15</td>
<td>-35</td>
<td>1225</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>0</td>
<td>7350</td>
</tr>
</tbody>
</table>
d = deviation of particular observation from mean.

d2 = Square of deviations of particular observations from mean score.

N = 150.

\[ \sum d^2 = 7350. \]

S.D. = \[ \sqrt{\frac{\sum d^2}{N}} \]

S.D. = \[ \sqrt{\frac{7350}{150}} \]

S.D. = 7

**Correlation coefficient**

The correlation coefficient has been calculated as under:-

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>X</th>
<th>x2</th>
<th>Y</th>
<th>y</th>
<th>y^2</th>
<th>x.y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extrovert</td>
<td>97</td>
<td>47</td>
<td>2209</td>
<td>120</td>
<td>70</td>
<td>4900</td>
<td>3290</td>
</tr>
<tr>
<td>Introvert</td>
<td>53</td>
<td>3</td>
<td>9</td>
<td>15</td>
<td>-35</td>
<td>1225</td>
<td>-105</td>
</tr>
<tr>
<td>Ambivert</td>
<td>0</td>
<td>-50</td>
<td>2500</td>
<td>15</td>
<td>-35</td>
<td>1225</td>
<td>1750</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>0</td>
<td>4718</td>
<td>150</td>
<td>0</td>
<td>7350</td>
<td>4935</td>
</tr>
</tbody>
</table>

**Table – 18**

Where,

X = Male Children of non working mothers.

Y = Female Children of non working mothers.

Mean(X) = \( \frac{150}{3} = 50 \).

Mean(Y) = \( \frac{150}{3} = 50 \).
\( x = \) deviations of a particular observation (male children of non-working mothers) from its mean score.

\( x^2 \) & \( y^2 \) = square of deviations.

\( y = \) deviations of a particular observation (female children of non-working mothers) from its mean score.

\( x.y = \) product of deviations of variables of the problem.

\( \sum x.y \) = sum of product of deviations of variables of the problem.

\( \sum x^2 \) = summation of squares of deviations of variable \( X \).

\( \sum y^2 \) = summation of squares of deviations of variable \( Y \).

\[
 r_{xy} = \frac{\sum x.y}{\sqrt{\sum x^2 \cdot \sum y^2}} \\
= \frac{4935}{\sqrt{4718.7350}} = +0.8380
\]

**Personality Traits of 300 children of non-working mothers**

- Mean = 100
- S.D. = 8.55
- \( r = +0.8380 \)
Percentage Calculation:-

The percentage of a particular object (personality trait) to the total no. of observations (N) is computed as under:-

\[
\text{Percentage} = \left( \frac{\text{Observations of a particular object}}{\text{Total No. of observations i.e. N}} \right) \times 100
\]

Therefore,

Percentage of personality patterns of children of non working mothers:

N=300, Extroverts = 217, Introverts = 68, Ambiverts = 15

**Extroverts** = \( \left( \frac{217}{300} \right) \times 100 \)

= 72.33%

**Introverts** = \( \left( \frac{68}{300} \right) \times 100 \)

= 22.67%

**Ambiverts** = \( \left( \frac{15}{300} \right) \times 100 \)

= 5%
Chart Showing Personality Patterns of 300 Children of non working mothers under Study

Percentage of personality traits of male children of non working mothers to total no. of male children of non working mothers under study:

N=150, Extroverts= 97, Introverts = 53, Ambiverts = Nil

**Extroverts** = (97/150) * 100

= 64.67%

**Introverts** = (53/150) * 100

= 35.33%

**Ambiverts** = Nil
Chart Showing Personality Patterns of 150 Male Children of non working mothers under Study

Percentage of personality traits of female children of non-working mothers under study:

N=150, Extroverts= 120, Introverts = 15, Ambiverts = 15

Extroverts = (120/150) * 100

= 80%

Introverts = (15/150) * 100

= 10%

Ambiverts = (15/150) * 100

=10%
CONCLUSION

The third table shows the results of the survey about personality traits of children of non-working mothers. The survey was conducted on 300 male and female children of non working mothers studying in both government as well as private schools and the results were derived as under :-

In symmetry with the mean scores of children of working mothers, the mean score of male children of non working mothers is computed as 50 and the mean score of female children of non working mothers is also found to be 50 which do favor our hypothesis and states the fact that there is no significant difference in the personality traits of children of non working mothers.

The standard deviation was calculated as 5.608 & 7 respectively. The correlation coefficient was also found as +0.8380 which is almost perfect positive correlation and is a proof to hold the hypothesis under study as true. The slight variation is noted as it found that the female children of non working mothers.
Hypothesis 4

Personality Attributes of 300 Children of Working Mothers & Non working mothers studying in Government Schools

<table>
<thead>
<tr>
<th></th>
<th>Extrovert</th>
<th>Introvert</th>
<th>Ambivert</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Mothers</td>
<td>139</td>
<td>11</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>Non-Working Mothers</td>
<td>126</td>
<td>16</td>
<td>8</td>
<td>150</td>
</tr>
<tr>
<td>Total</td>
<td>265</td>
<td>27</td>
<td>8</td>
<td>300</td>
</tr>
</tbody>
</table>

Table- 19

Table IV depicts the results of the survey conducted among children of working and non working mothers studying in Government schools. The children were surveyed from Government schools and the data is tabulated as above. Out of 300 children under study, a total of 265 were found to be Extrovert whereas 27 were observed as Introverts and 8 children were observed as Ambivert after application of the scoring technique on the data so collected during the survey.

In pursuance of the test of hypothesis under study, the calculations were performed as under:-

Mean (M):

\[ \frac{\sum X}{N} \]

\[ \sum X = 265+27+8 = 300 \]
\[ N = 3 \]
\[ M = \frac{300}{3} = 100. \]

\[ M \text{ (children of working mothers)} = \frac{(139+11+0)}{3} = 50 \]
\[ M \text{ (children of non working mothers)} = \frac{(126+16+8)}{3} = 50 \]

**Standard deviation**

Computation of standard deviation of the data has been made as follows:-

**S.D. for children studying in government schools:**

\[
\begin{array}{|c|c|c|}
\hline
 & X & d & d^2 \\
\hline
\text{Extroverts} & 265 & 165 & 27225 \\
\hline
\text{Introverts} & 27 & -73 & 5329 \\
\hline
\text{Ambiverts} & 8 & -92 & 8464 \\
\hline
\text{Total} & 300 & 0 & 41018 \\
\hline
\end{array}
\]

Table – 20

Where,

\[ \text{Mean} = \frac{300}{3} = 100. \]

\[ d = \text{deviation of particular observation from mean}. \]

\[ d^2 = \text{Square of deviations of particular observations from mean score}. \]

\[ N = 300. \]

\[ \sum d^2 = 41018. \]

\[ \text{S.D.} = \sqrt{\frac{\sum d^2}{N}} \]
S.D. = \sqrt{41018/300}
S.D. = 11.69

**S.D. for Children of working mothers in government schools:**

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>D</th>
<th>d2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroverts</td>
<td>139</td>
<td>89</td>
<td>7921</td>
</tr>
<tr>
<td>Introverts</td>
<td>11</td>
<td>-39</td>
<td>1521</td>
</tr>
<tr>
<td>Ambiverts</td>
<td>0</td>
<td>-50</td>
<td>2500</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>0</td>
<td>11942</td>
</tr>
</tbody>
</table>

Table -21

Where,

**Mean** = 150/3 = 50.

\(d\) = deviation of particular observation from mean.

\(d^2\) = Square of deviations of particular observations from mean score.

\(N\) = 150.

\(\Sigma d^2 = 11942\).

\[\text{S.D.} = \sqrt{\frac{\Sigma d^2}{N}}\]

S.D. = \sqrt{11942/150}
S.D. = 8.93
S.D. for children of non-working mothers in government schools:

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>D</th>
<th>d²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroverts</td>
<td>126</td>
<td>76</td>
<td>5776</td>
</tr>
<tr>
<td>Introverts</td>
<td>16</td>
<td>-34</td>
<td>1156</td>
</tr>
<tr>
<td>Ambiverts</td>
<td>8</td>
<td>-42</td>
<td>1764</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>0</td>
<td>8696</td>
</tr>
</tbody>
</table>

Table – 22

Where,

\[
\text{Mean} = \frac{150}{3} = 50.
\]

\[d = \text{deviation of particular observation from mean.}\]

\[d² = \text{Square of deviations of particular observations from mean score}.\]

\[N = 150.\]

\[\sum d² = 8696\]

\[\text{S.D.} = \sqrt{\frac{\sum d²}{N}}\]

\[\text{S.D.} = \sqrt{\frac{8696}{150}}\]

\[\text{S.D.} = 7.614\]

\textbf{Correlation coefficient}

The correlation coefficient has been calculated as under:-
<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>x</th>
<th>X2</th>
<th>Y</th>
<th>y</th>
<th>y2</th>
<th>x.y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extrovert</td>
<td>139</td>
<td>89</td>
<td>7921</td>
<td>126</td>
<td>76</td>
<td>5776</td>
<td>6764</td>
</tr>
<tr>
<td>Introvert</td>
<td>11</td>
<td>-39</td>
<td>1521</td>
<td>16</td>
<td>-34</td>
<td>1156</td>
<td>1326</td>
</tr>
<tr>
<td>Ambivert</td>
<td>0</td>
<td>-50</td>
<td>2500</td>
<td>8</td>
<td>-42</td>
<td>1764</td>
<td>2100</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>0</td>
<td>11942</td>
<td>150</td>
<td>0</td>
<td>8696</td>
<td>10190</td>
</tr>
</tbody>
</table>

**Table -23**

Where,

X = Children of working mothers studying in Government schools.

Y = Children of non working mothers studying in Government schools.

Mean(X) = 150/3 = 50.

Mean(Y) = 150/3 = 50.

x = deviations of a particular observation (Children of working mothers studying in govt. schools) from its mean score.

x2 & y2 = square of deviations.

y = deviations of a particular observation (Children of non working mothers studying in govt. schools) from its mean score.

x.y = product of deviations of variables of the problem.

\[ \sum x.y. = \text{sum of product of deviations of variables of the problem.} \]

\[ \sum x^2 = \text{summation of squares of deviations of variable X.} \]

\[ \sum y^2 = \text{summation of squares of deviations of variable Y.} \]
\[ r_{xy} = \frac{\sum x.y}{\sqrt{\sum x^2 \cdot \sum y^2}} \]

= \frac{10190}{\sqrt{11942 \cdot 8696}}

= +1

Personality Traits of 300 children of working and non-working mothers studying in Government schools

Mean=100

S.D.=11.69

r=+1

Diagram - 4

Percentage Calculation:-
The percentage of a particular object (personality trait) to the total no. of observations (N) is computed as under:

\[
\text{Observations of a particular object} \quad \frac{\text{---------------------------}}{\text{Total No. of observations i.e. N}} \quad \times 100
\]

Therefore,

Percentage of personality patterns of children of working & non working mothers studying in Government schools:

N=300, Extroverts = 265, Introverts = 27, Ambiverts = 8

**Extroverts** = \((265/300) \times 100\)

\[= 88.33\%\]

**Introverts** = \((27/300) \times 100\)

\[= 9\%\]

**Ambiverts** = \((8/300) \times 100\)

\[= 2.67\%\]
Chart Showing Personality Patterns of 300 Children of working and non working mothers studying in Government schools under Study

Graph - 10

Percentage of personality traits of children of working mothers studying in government schools to total no. of children of working mothers studying in government schools under study:-

N=150, Extroverts=139, Introverts=11, Ambiverts=Nil

**Extroverts** = \( \frac{139}{150} \times 100 \)

= 92.67%

**Introverts** = \( \frac{11}{150} \times 100 \)

= 7.33%

**Ambiverts** = Nil
Chart Showing Personality Patterns of 150 Children of working mothers studying in Government schools under Study

Graph - 11

Percentage of personality traits of children of non-working mothers studying in Govt. schools to total no. of children of non-working mothers studying in Govt. schools under study:

N=150, Extroverts= 126, Introverts = 16, Ambiverts = 8

Extroverts = \( \frac{126}{150} \times 100 \)

\[ = 84\% \]

Introverts = \( \frac{16}{150} \times 100 \)

\[ = 10.67\% \]

Ambiverts = \( \frac{8}{150} \times 100 \)

\[ = 5.33\% \]
Conclusion

The forth table shows the results of the survey about personality traits of children of working and non-working mothers studying in Government schools. The survey was conducted on 300 children of both working and non-working mothers studying in government schools and the results were derived as under:

The mean scores of children of working mothers as well as the mean score of children of non-working mothers is computed as 50 which supports our hypothesis and states the fact that there is no significant difference in the personality traits of children of working & non-working mothers studying in Government schools.

The standard deviation was calculated as 8.93 & 7.614 respectively. The correlation coefficient was also found to be a perfect positive correlation i.e. +1 and is a proof to hold the hypothesis under study as true.
88.33% children of working as well as non working mothers studying in govt. schools under study were found as extroverts where as the percentage of introvert children was quite low i.e.9% only and 2.67% children were found as ambivert.

**Hypothesis 5**

**Table Showing Personality Attributes of Children of Working Mothers & Non working mothers studying in Private Schools**

<table>
<thead>
<tr>
<th></th>
<th>Extrovert</th>
<th>Introvert</th>
<th>Ambivert</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Mothers</td>
<td>150</td>
<td>Nil</td>
<td>Nil</td>
<td>150</td>
</tr>
<tr>
<td>Non-Working Mothers</td>
<td>104</td>
<td>35</td>
<td>11</td>
<td>150</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>254</td>
<td>35</td>
<td>11</td>
<td>300</td>
</tr>
</tbody>
</table>

**Table- 24**

Table IV depicts the results of the survey conducted among children of working and non working mothers studying in private schools. The children were surveyed from Government schools and the data is tabulated as above. Out of 300 children under study, a total of 254 were found to be Extrovert whereas 35 were observed as Introverts and 11 children were observed as Ambivert after application of the scoring technique on the data so collected during the survey.

In pursuance of the test of hypothesis under study, the calculations were performed as under:-

**Mean (M):**

\[
\frac{\sum X}{n}
\]
\[ N \]
\[ \sum X = 254 + 35 + 11 = 300 \]
\[ N = 3 \]
\[ M = \frac{300}{3} \]
\[ = 100. \]

M (children of working mothers) = \( \frac{150+0+0}{3} = 50 \)

M (children of non working mothers) = \( \frac{104+35+11}{3} = 50 \)

**Standard deviation:**

Computation of standard deviation of the data has been made as follows:

**S.D. for children studying in private schools:**

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>D</th>
<th>d2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroverts</td>
<td>254</td>
<td>154</td>
<td>23716</td>
</tr>
<tr>
<td>Introverts</td>
<td>35</td>
<td>-65</td>
<td>4225</td>
</tr>
<tr>
<td>Ambiverts</td>
<td>11</td>
<td>-89</td>
<td>7921</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>0</td>
<td>35862</td>
</tr>
</tbody>
</table>

*Table- 25*

Where,

**Mean= 300/3 = 100.**
d = deviation of particular observation from mean.

d2 = Square of deviations of particular observations from mean score.

N = 300.

\[ \sum d^2 = 35862. \]

S.D. = \[ \sqrt{\frac{\sum d^2}{N}} \]

S.D. = \[ \sqrt{\frac{35862}{300}} \]

S.D. = 10.933

S.D. for Children of working mothers in private schools:

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>D</th>
<th>d2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroverts</td>
<td>150</td>
<td>100</td>
<td>10000</td>
</tr>
<tr>
<td>Introverts</td>
<td>0</td>
<td>-50</td>
<td>2500</td>
</tr>
<tr>
<td>Ambiverts</td>
<td>0</td>
<td>-50</td>
<td>2500</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>0</td>
<td>15000</td>
</tr>
</tbody>
</table>

Table- 26

Where,

Mean= 150/3 = 50.

d = deviation of particular observation from mean.

d2 = Square of deviations of particular observations from mean score.

N = 150.

\[ \sum d^2 = 15000. \]
S.D. = \sqrt{\frac{\sum d^2}{N}}

S.D. = \sqrt{\frac{15000}{150}}

S.D. = 10

S.D. for children of non-working mothers in private schools:

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>D</th>
<th>d^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroverts</td>
<td>104</td>
<td>54</td>
<td>2916</td>
</tr>
<tr>
<td>Introverts</td>
<td>35</td>
<td>-15</td>
<td>225</td>
</tr>
<tr>
<td>Ambiverts</td>
<td>11</td>
<td>-39</td>
<td>1521</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>0</td>
<td>4662</td>
</tr>
</tbody>
</table>

Table – 27

Where,

Mean= \frac{150}{3} = 50.

d = deviation of particular observation from mean.

d^2 = Square of deviations of particular observations from mean score.

N = 150.

\sum d^2 = 4662

S.D. = \sqrt{\frac{\sum d^2}{N}}

S.D. = \sqrt{4662/150}
S.D. = 5.57

**Correlation Coefficient:**

The correlation coefficient has been calculated as under:

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>X</th>
<th>x²</th>
<th>Y</th>
<th>y</th>
<th>y²</th>
<th>x.y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extrovert</td>
<td>150</td>
<td>100</td>
<td>10000</td>
<td>104</td>
<td>54</td>
<td>2916</td>
<td>5400</td>
</tr>
<tr>
<td>Introvert</td>
<td>0</td>
<td>-50</td>
<td>2500</td>
<td>35</td>
<td>-15</td>
<td>225</td>
<td>750</td>
</tr>
<tr>
<td>Ambivert</td>
<td>0</td>
<td>-50</td>
<td>2500</td>
<td>11</td>
<td>-39</td>
<td>1521</td>
<td>1950</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>0</td>
<td>15000</td>
<td>150</td>
<td>0</td>
<td>4662</td>
<td>8100</td>
</tr>
</tbody>
</table>

**Table -28**

Where,

X = Children of working mothers studying in Government schools.

Y = Children of non working mothers studying in Government schools.

Mean(X) = 150/3 = 50.

Mean(Y) = 150/3 = 50.

x = deviations of a particular observation (Children of working mothers studying in private schools) from its mean score.

x² & y² = square of deviations.

y = deviations of a particular observation (Children of non working mothers studying in private schools) from its mean score.

x.y = product of deviations of variables of the problem.

\[ \sum x.y. = \text{sum of product of deviations of variables of the problem.} \]
\( \sum x^2 = \text{summation of squares of deviations of variable X.} \)

\( \sum y^2 = \text{summation of squares of deviations of variable Y.} \)

\[ r_{xy} = \frac{\sum x.y}{\sqrt{\sum x^2 \cdot \sum y^2}} \]

\[ = \frac{8100}{\sqrt{15000 \cdot 4662}} \]

\[ = +0.9686 \]

**Personality Traits of 300 children of working and non-working mothers studying in private schools**

- **Mean=100**
- **S.D.=10.933**
- **r=+0.9686**

**Diagram - 5**

**Percentage Calculation:-**

The percentage of a particular object (personality trait) to the total no. of observations (N) is computed as under:-
Observations of a particular object

-------------------------------------------    * 100

Total No. of observations i.e. N

Therefore,

Percentage of personality patterns of children of working & non working mothers studying in Private schools:

N=300, Extroverts = 254, Introverts = 35, Ambiverts = 11

**Extroverts** = (254/300) * 100

= 84.67%

**Introverts** = (35/300) * 100

= 11.67%

**Ambiverts** = (11/300) *100

= 3.66%
Chart Showing Personality Patterns of 300 Children of working and non working mothers studying in Private schools under Study

Graph - 13

Percentage of personality traits of children of working mothers studying in private schools to total no. of children of working mothers studying in private schools under study:

N=150, Extroverts= 150, Introverts = Nil, Ambiverts = Nil

**Extroverts** = (150/150) * 100

= 100%

**Introverts** = Nil

**Ambiverts** = Nil
Chart Showing Personality Patterns of 150 Children of working mothers studying in Private schools under Study

Graph - 14

Percentage of personality traits of children of non working mothers studying in private schools to total no. of children of non working mothers studying in private schools under study:-

N=150, Extroverts= 104, Introverts = 35, Ambiverts =11

**Extroverts** = \( \frac{104}{150} \times 100 \)

= 69.33%

**Introverts** = \( \frac{35}{150} \times 100 \)

=23.33%

**Ambiverts** = \( \frac{11}{150} \times 100 \)

=7.34%
Conclusion

The fifth table shows the results of the survey about personality traits of children of non-working mothers who are studying in Private schools under study. The survey was conducted on 300 children of both working and non working mothers studying in private schools and the results were derived as under :-

The mean scores of children of working mothers as well as the mean score of children of non-working mothers is computed as 50 which establishes symmetry with the mean score of such children of working and non-working mothers studying in government schools and which advocates the acceptance of hypothesis under study and reveals that there is no significant difference in the personality traits of children of working & non working mothers studying in private schools and Government schools also.