

A PROJECT ON

***PERSONALITY TRAITS OF NCC AND NON-NCC OF THIRD YEAR
STUDETNS OF
Z. B. PATIL COLLEGE, DHULE.***



Presented By

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- Miss. Shelar Pallavi Madhukar

Submitted To

Department Of Statistics

Jai Hind Education Trust's

Z. B. Patil College, Dhule.

Under The Guidance Of

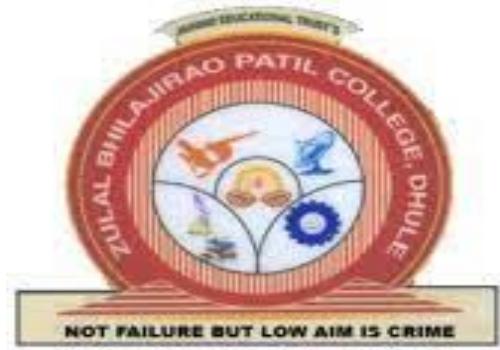
Prof. P. U. Patil

Department of Statistics

In Partial Fulfilment of Degree Couse

B.Sc. (Statistics)

ACADAMIC YEAR 2022-2023



CERTIFICATE

This is to certify that a project report on

**“PERSONALITY TRAITS OF NCC AND NON-NCC OF THIRD YEAR STUDENTS OF
Z. B. PATIL COLLEGE DHULE”**

Submitted by

- Mr. Patil Sushil Arun
- Mr. Deore Girish Brijalal
- Miss. Shelar Pallavi Madhukar

Under the Guidance in partial fulfilment of requirement for award of “Bachelor of Science (Statistics)” of North Maharashtra University, Jalgaon, in academic year

2022-2023.

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Above all, we express our eternal gratitude to the Lord Almighty under whose divine guidance. We have been able to complete this work successfully.

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Thanks a lot!

Mr. Patil Sushil A.

Mr. Deore Girish B.

Miss. Shelar Pallavi M.

INTRODUCAITON

“Trait” refers to consistent difference between the behaviour and characteristics of two or more people. Thus, “a trait is any distinguishable, relatively enduring way in which one individual varies from another”.

Walter Michel in his books, Introduction of Personality, (1976) define, “trait is a continuous dimension on which individual difference may be arranged quantitatively in terms of the amount of the characteristics, the individual has”.

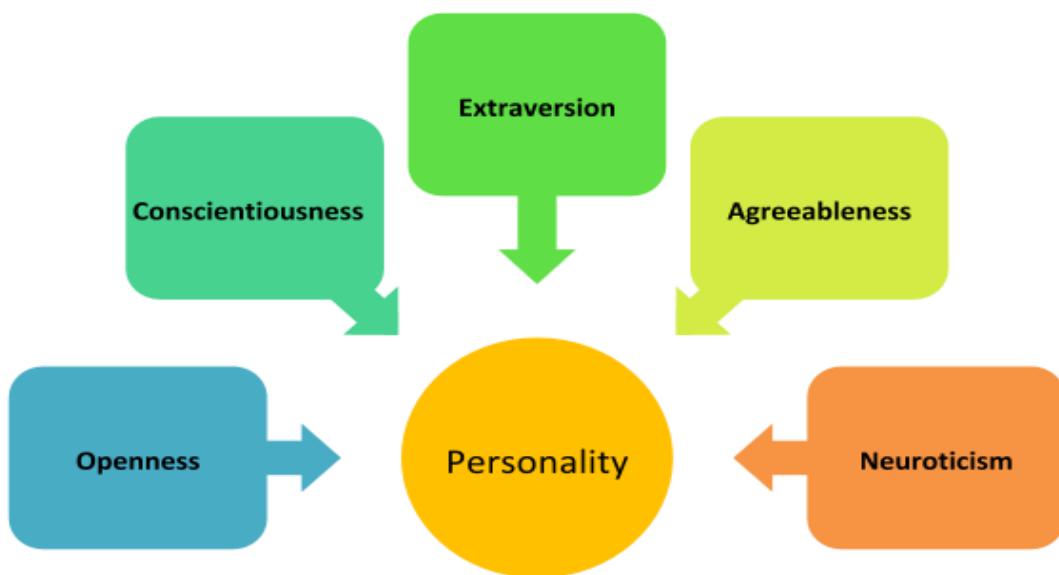
The Big Five contain important dimensions of personality. However, some personality researchers argue that this list of major traits is not exhaustive. Some support has been found for two additional factors: excellent/ordinary and evil/decent. However, no definitive conclusions have been established. Every personality is the product of heredity and environment as both contribute significantly towards the development of child’s personality. Learning and acquisition of experiences contribute towards growth and development of personality. Every personality is the product of this process of learning and acquision.

The motto of this survey to study of psychology (personality test) of NCC & Non-NCC student in our collage.

Psychologically speaking, personality is all that a person is. It is the totality of one’s behaviour towards one another. It includes everything about the person, his physical, emotional, social, mental, and spiritual make-up. It is all that a person has about him.

- The motto has five cardinal principles, namely -

1. Openness
2. Conscientiousness
3. Extraversion
4. Agreeableness
5. Neuroticism



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Information of NEO Test

Paul Costa and Robert McCrae :- In the final decades of the twentieth century an increasing number of psychologist come to the conclusion that the three factor model was too simple and that 16 factors were too many.



In 1990 Paul costa and Robert McCrae presented their “Five Factor Theory” and introduced the associated NEO Personality Inventory. (McCrae, R.R. and Costa, P.T. (1997) Personality trait structure as a human universal)

In psychology, the Big five personality traits are five broad domains or dimensions of personality that are used to describe human personality. The theory based on the Big five factors is called the Five Factor Model (FFM). Five factors are, (Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism).

The Big five has been preferably used, since it is able to measure different traits in personality without overlapping. During studies, the Big Five personality traits show consistency in interviews, self-descriptions, and when observed. Acronyms commonly used to refer to the five traits collectively are OCEAN, NEOAC, or CANDOE. (Factor's name).

CONCLUSION

1. To test the personality traits of NCC and Non-NCC students

2. To test the personality traits of Male and Female (Gender difference)

With the help of t-test & Run test and process, coding with the SPSS software (Statistical Purpose of Social Science)

SAMPLE

The total sample of 48 subject was collected randomly from our collage of different departments such as Physics, Chemistry, Mathematics, Statistics etc.. The subject were from different streams of faculty (Arts, commerce and science).

There were 24 are NCC participants (12 males and 12 females) and 24 are Non-NCC participant (12 males and 12 females) The subjects were college students studying and 3rd year of graduation and NCC subjects were pursuing the 3rd year of NCC training as well.

We are classified the population in to two part's such as i.e., Gender it contains Male and Female and other one is Students it contains all the population of NCC and Non-NCC students.

The average age of the students was 20 years.

Gender	NCC	Non-NCC	Total
Male	12	12	24
Female	12	12	24
Total	24	24	48

Aim

There is growing recognition at our college levels in that how student's social, and we measure the personality traits in our college students NCC and Non-NCC students.

Thus, personality traits are not just a useful way to describe people you know; they actually help psychologist predict how good a worker someone will be, how long he or she will live, and the types of jobs and activities the person will enjoy.

Personality development is the action of enhancing the behavioural traits, attitude, and thoughts to stand out in the crowd.

PROCEDURE

In order to obtain the sample, student form different-different faculty in our collage, such as Arts, Commerce and Science are selected. The permission to collect data was obtained from the concerned authorities and individuals. The participants was explained in purpose of the study and general instructions were given to them. After taking their informed consent, data collection was carried out.

After giving the numerical form to data we, plot the Q-Q plot, frequency, Histogram of data by taking help of SPSS tool (statistical package of social science).

PURPOSE OF STUDY

- Opportunity for personality development.
- Learn to care & share with your countrymen.
- To be a leader and manager.
- Opportunity to learn some new topic (about psychology).
- Self-motivation.
- Reflect people's characteristic patterns of thought, feelings, and behaviours.



QUALITIES OF NCC STUDENTS

- ❖ NCC students have good General Awareness.
- ❖ NCC students have a loud and clear voice.
- ❖ NCC students have good communication skills.
- ❖ NCC students believe in the mantra, 'unity and discipline'.
- ❖ NCC students know how to survive with no facilities provided.
- ❖ NCC students may have to best time management skills.
- ❖ NCC students know map reading, and use of compass.
- ❖ NCC students can adjust to any kind situation.

QUALITIES OF NCC NON-STUDENTS

- ❖ Non-NCC students have also a good General Awareness.
- ❖ Non-NCC students have Self Discipline.
- ❖ Non-NCC students have Being Punctual.
- ❖ Non-NCC students is a Goal driven.
- ❖ Non-NCC students have Having Perseverance.
- ❖ Non-NCC students Being Punctual.
- ❖ Non-NCC students Being Courteous.

(Also includes in NCC boys.)

Format of Questions -

	Strongly Disagree	Somewhat Disagree	No Opinion	Somewhat Agree	Strongly Agree
I am easygoing.	<input type="radio"/>				
I have high standards.	<input type="radio"/>				
I enjoy time alone.	<input type="radio"/>				
I work well with others.	<input type="radio"/>				
I dislike confrontation.	<input type="radio"/>				
I prefer crowds over intimacy.	<input type="radio"/>				

Questionnaire –

As per our suggestion we only type the format of the Questionnaire on this page and we are trying to input all the topics and all the factors was covered in this examples.

We covered all the questions regarding to the project topic's

Such as all factors contains different different questions in the questionnaire in such factors are (Openness, Conscientiousness, Extraversion, Agreeableness & Neuroticism)

The questions are given.

(Samples of questions such as)

1. Neuroticism. –

- I am not a worrier.
- At times I have felt bitter and resentful.
- When I'm under a great deal of stress, sometimes I feel like I'm going to pieces.
- I rarely feel lonely or blue.
- I often feel tense and jittery.

Conclusion:

Neuroticism is the tendency to experience negative emotions such as sadness or anxiety, as well as good swings.

Those scoring high on neuroticism tend to worry or ruminate a great deal and are prone to having their feelings easily hurt.

2. Extraversion. –

- I like to have a lot of people around me.
- I laugh easily.
- When I'm under a great deal of stress, sometimes I feel like I'm going to pieces.
- I like to be where the action is.
- I shy away from crowds of people.

Conclusion:

People with high extroversion tend to relate well to others, and are often well-liked in their teams and offices.

Extraversion is a measure of how energetic, sociable and friendly a person is

3. Openness. –

- I enjoy concentrating on a fantasy or daydream and exploring all its possibilities, letting it grow and develop.
- I think it's interesting to learn and develop new hobbies.
- I am intrigued by the patterns I find in art and nature.

- I believe letting students hear controversial speakers can only confuse and mislead them.
- Poetry has little or no effect on me.

Conclusion:

Openness (open-mindedness), this calls for active listeners who do not wish to have their expectations confirmed, but who bring with them a certain curiosity and openness to the world.

4. Agreeableness. –

- I try to be courteous to everyone I meet.
- At times I bully or flatter people into doing what I want them to.
- Some people think I'm selfish and egotistical.
- If someone starts a fight, I'm ready not fight back.
- I'm better than most people, and I know it.

Conclusion:

Agreeableness describes a person's ability to put others needs before their own.

5. Conscientiousness. –

- I keep my belongings neat and clean.
- I'm pretty good about pacing myself so as to get thing done on time.
- I often come into situations without being fully prepared.
- I try to perform all the tasks assigned to me conscientiously.
- I have clear set of goals and work toward them in an orderly fashion.

Conclusion:

Higher levels of conscientiousness are associated with an increased appraisal of coping abilities, as well as higher levels of control in the context of a stressor. Moreover, conscientious individuals tend to find stressful situations less demanding than less conscientious individuals.

What is SPSS –



Statistics is a fast and powerful solution that propels research analysis in numerous industries. SPSS Statistics is used in education, market research, healthcare, government, and retail throughout the entire analytics process, from planning and data collection to analysis, reporting and deployment.

The core functionalities offered in SPSS are:

- **Statistical program for quantitative data analysis – It includes frequencies, cross-tabulation, and bivariate statistics.**

- Modeler program that allows for predictive modelling.
It enables researchers to build and validate predictive models using advanced statistical procedures.
- Text analysis helps you derive insights from qualitative inputs through open-ended questionnaires.
- Visualization Designer allows researchers to use their data for a variety of visual representations.



Population of NCC and Non-NCC Student's –

COMPUTATION OF DATA.

Sr. no.	Name	<u>NCC Male's</u>				
		N	E	O	A	C
1	Badgujar P. D.	22	39	24	35	46
2	More P. G.	20	40	26	26	47
3	Mahale P. H.	14	37	22	32	46
4	Thakare C. U.	16	34	26	31	40
5	Gharate G. S.	23	31	21	26	38
6	Patil Y. M.	24	30	31	32	34
7	Deore G. B.	29	20	30	13	26
8	Patil Y. A.	34	35	23	32	41
9	Khairnar I. P.	19	27	25	30	29
10	Patil A. P.	24	22	22	20	34
11	Pawar S. Y.	27	24	23	27	23
12	Deore H. G.	19	28	28	22	33
		<u>Non-NCC Male's</u>				
13	Wagh N. V.	23	21	30	28	17
14	Patil J. L.	24	31	25	26	33
15	Gawali C. V.	27	35	20	29	34
16	Suryawanshi M. B.	20	36	23	22	43
17	Patil M. M.	13	27	27	32	42
18	Patil S. S.	18	27	28	28	41
19	Patil S. A.	22	33	26	25	35
20	Baviskar H. K.	34	29	28	23	29
21	Kalal M. S.	19	22	30	25	16
22	Dusing V. R.	26	32	20	19	27
23	Patil A. N.	27	27	21	15	26
24	Khade B. S.	23	31	16	26	39

NCC Female's						
25	Shinde K. B.	23	33	28	32	37
26	Pakhare M. R.	25	25	28	27	31
27	Patil D. M.	28	32	22	25	45
28	Nimbalkar B. S.	24	29	26	24	38
29	Khatik T. S.	29	27	27	36	36
30	Badgujar V. P.	26	32	22	22	41
31	Desale A. K.	24	38	27	26	38
32	Chaudhari V. V.	18	35	28	30	40
33	Kapade N. B.	29	26	31	18	30
34	Khairnar J. V.	20	36	27	27	40
35	Borse P. J.	13	28	23	25	31
36	Shinde N. K.	32	30	16	24	34
Non-NCC Female's						
37	Patil H. A.	24	18	16	33	25
38	Patil S. V.	22	26	27	32	37
39	Mali N. B.	33	29	29	26	38
40	Patil A. B.	20	28	29	22	34
41	Khatik S. R.	26	29	28	28	40
42	Shelar P. M.	26	29	23	31	34
43	Bhamare K. K.	24	32	26	23	40
44	Jogi A. D.	28	23	26	30	33
45	Bagul K. V.	22	27	22	31	34
46	Patil K. V.	30	21	34	28	15
47	Nerkar V. S.	25	26	22	26	35
48	Borse H. S.	19	30	23	27	29



Freq. Tables -

1. Neuroticism:

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	13	2	4.2	4.2
	14	1	2.1	6.3
	16	1	2.1	8.3
	17	1	2.1	10.4
	18	2	4.2	14.6
	19	4	8.3	22.9
	20	4	8.3	31.3
	22	3	6.3	37.5
	23	4	8.3	45.8
	24	6	12.5	58.3
	25	2	4.2	62.5
	26	4	8.3	70.8
	27	4	8.3	79.2
	28	2	4.2	83.3
	29	3	6.3	89.6
	30	1	2.1	91.7
	32	1	2.1	93.8
	33	1	2.1	95.8
	34	2	4.2	100.0
Total	48	100.0	100.0	

2. Extraversion:

	Frequency	Percent	Valid Percent	Cumulative Percent
18	1	2.1	2.1	2.1
20	1	2.1	2.1	4.2
21	2	4.2	4.2	8.3
22	2	4.2	4.2	12.5
23	1	2.1	2.1	14.6
24	1	2.1	2.1	16.7
25	1	2.1	2.1	18.8
26	3	6.3	6.3	25.0
27	6	12.5	12.5	37.5
28	3	6.3	6.3	43.8
29	5	10.4	10.4	54.2
Valid	30	3	6.3	60.4
31	3	6.3	6.3	66.7
32	4	8.3	8.3	75.0
33	2	4.2	4.2	79.2
34	1	2.1	2.1	81.3
35	3	6.3	6.3	87.5
36	2	4.2	4.2	91.7
37	1	2.1	2.1	93.8
38	1	2.1	2.1	95.8
39	1	2.1	2.1	97.9
40	1	2.1	2.1	100.0
Total	48	100.0	100.0	

3. Openness:

	Frequency	Percent	Valid Percent	Cumulative Percent
16	3	6.3	6.3	6.3
20	2	4.2	4.2	10.4
21	2	4.2	4.2	14.6
22	6	12.5	12.5	27.1
23	7	14.6	14.6	41.7
24	1	2.1	2.1	43.8
25	2	4.2	4.2	47.9
Valid	26	6	12.5	60.4
	27	5	10.4	70.8
	28	7	14.6	85.4
	29	2	4.2	89.6
	30	3	6.3	95.8
	31	1	2.1	97.9
	34	1	2.1	100.0
Total	48	100.0	100.0	

4. AGREEABLENESS

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	13	1	2.1	2.1
	15	1	2.1	4.2
	18	1	2.1	6.3
	19	1	2.1	8.3
	20	1	2.1	10.4
	22	4	8.3	18.8
	23	2	4.2	22.9
	24	2	4.2	27.1
	25	4	8.3	35.4
	26	7	14.6	50.0
	27	4	8.3	58.3
	28	4	8.3	66.7
	29	1	2.1	68.8
	30	3	6.3	75.0
	31	3	6.3	81.3
	32	6	12.5	93.8
	33	1	2.1	95.8
	35	1	2.1	97.9
	36	1	2.1	100.0
Total	48	100.0	100.0	

5. CONSCIENTIOUSNESS

	Frequency	Percent	Valid Percent	Cumulative Percent
15	1	2.1	2.1	2.1
16	1	2.1	2.1	4.2
17	1	2.1	2.1	6.3
23	1	2.1	2.1	8.3
25	1	2.1	2.1	10.4
26	2	4.2	4.2	14.6
27	1	2.1	2.1	16.7
29	3	6.3	6.3	22.9
30	1	2.1	2.1	25.0
31	2	4.2	4.2	29.2
32	1	2.1	2.1	31.3
33	3	6.3	6.3	37.5
Valid	34	14.6	14.6	52.1
	35	4.2	4.2	56.3
	36	2.1	2.1	58.3
	37	4.2	4.2	62.5
	38	8.3	8.3	70.8
	39	2.1	2.1	72.9
	40	10.4	10.4	83.3
	41	6.3	6.3	89.6
	43	2.1	2.1	91.7
	45	2.1	2.1	93.8
	46	4.2	4.2	97.9
	47	2.1	2.1	100.0
Total	48	100.0	100.0	

Group statistics -

1.

NCC and Non-NCC					
FACTOR	STUDENTS	N	Mean	Std. Deviation	Std. Error Mean
NEUROTICISM	NCC	24	23.54	5.445	1.111
	Non-NCC	24	23.75	4.937	1.008
EXTRAVERSION	NCC	24	30.75	5.391	1.1
	Non-NCC	24	27.88	4.504	0.919
OPENNESS	NCC	24	24.92	3.374	0.689
	Non-NCC	24	24.96	4.467	0.912
AGREEABLENESS	NCC	24	26.75	5.447	1.112
	Non-NCC	24	26.46	4.324	0.883
CONSCIENTIOUSNESS	NCC	24	36.58	6.358	1.298
	Non-NCC	24	31.92	7.729	1.578

2.

Male and Female					
FACTOR	GENDER	N	Mean	Std. Deviation	Std. Error Mean
NEUROTICISM	Male	24	22.71	5.552	1.133
	Female	24	24.58	4.624	0.944
EXTRAVERSION	Male	24	29.92	5.649	1.153
	Female	24	28.71	4.582	0.935
OPENNESS	Male	24	24.46	3.611	0.737
	Female	24	25.42	4.221	0.862
AGREEABLENESS	Male	24	26	5.525	1.128
	Female	24	27.21	4.139	0.845
CONSCIENTIOUSNESS	Male	24	33.71	8.544	1.744
	Female	24	34.79	6.157	1.257

❖ Test: t test for two sample's

Hypothesis –

For NCC and Non-NCC Students.

1. **H₀:** No personality difference between NCC and Non-NCC students.

H₁: Personality difference between NCC and Non-NCC students.

Table for NCC and Non-NCC Students.

Group Statistics					
	STUDENTS	N	Mean	Std. Deviation	Std. Error Mean
NEUROTICISM	NCC	24	23.54	5.445	1.111
	Non-NCC	24	23.75	4.937	1.008
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CONSCIENTIOUSNESS	NCC	24	36.58	6.358	1.298
	Non-NCC	24	31.92	7.729	1.578

Same formula is applicable for all factor's =

[T test – Two samples]

$$t = \frac{(x_1 - x_2)}{\sqrt{\frac{(s_1)^2}{n_1} + \frac{(s_2)^2}{n_2}}}$$

1. Factor Neuroticism:

Hypothesis. -

$$H_0: \mu_1 = \mu_2 \quad V/S \quad H_1: \mu_1 \neq \mu_2 \quad (\alpha=0.05)$$

$$T_{cal} = -0.1399 \quad T_{tab} = 2.064$$

$$|T_{cal}| = 0.1399 < T_{tab} = 2.064$$

Ho is accepted

2. Factor Extraversion:

Hypothesis. -

$$H_0: \mu_1 = \mu_2 \quad V/S \quad H_1: \mu_1 \neq \mu_2 \quad (\alpha=0.05)$$

$$T_{cal} = 2.0015 \quad T_{tab} = 2.064$$

$$|T_{cal}| = 2.0015 < T_{tab} = 2.064$$

Ho is accepted

3. Factor Openness:

Hypothesis. -

$$H_0: \mu_1 = \mu_2 \quad V/S \quad H_1: \mu_1 \neq \mu_2 \quad (\alpha=0.05)$$

$$T_{cal} = -0.0350 \quad T_{tab} = 2.064$$

$$|T_{cal}| = 0.0350 < T_{tab} = 2.064$$

Ho is accepted

4. Factor Agreeableness:

Hypothesis. -

$$H_0: \mu_1 = \mu_2 \quad V/S \quad H_1: \mu_1 \neq \mu_2 \quad (\alpha=0.05)$$

$$T_{cal} = 0.2043 \quad T_{tab} = 2.064$$

$$|T_{cal}| = 0.2043 < T_{tab} = 2.064$$

Ho is accepted

5. Factor Conscientiousness:

Hypothesis. -

$$H_0: \mu_1 = \mu_2 \quad V/S \quad H_1: \mu_1 \neq \mu_2 \quad (\alpha=0.05)$$

$$T_{cal} = 0.2043 \quad T_{tab} = 2.064$$

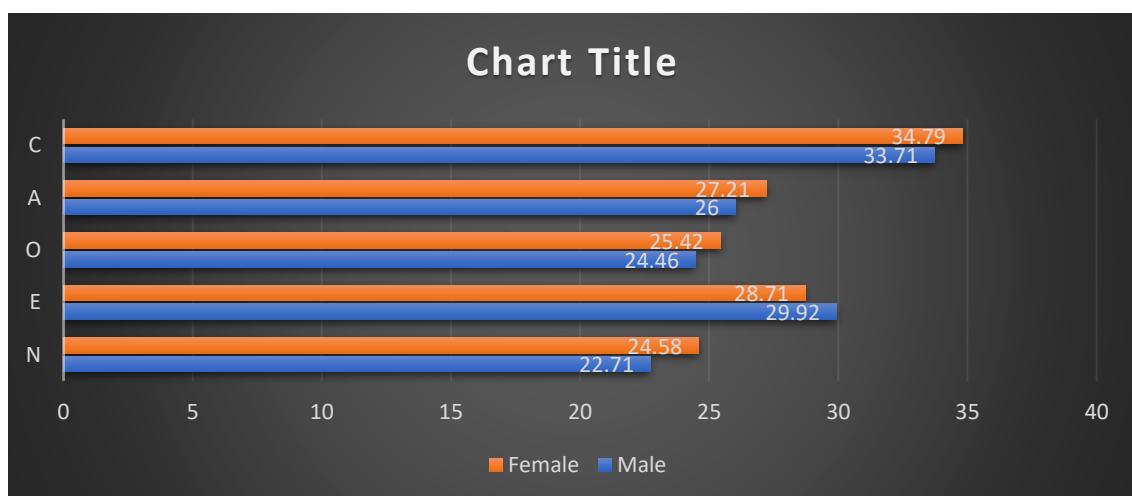
$$|T_{cal}| = 0.2043 < T_{tab} = 2.064$$

Ho is accepted

In all the factor's Ho will accepted.

Therefore, we claimed that.

There is no significance difference between NCC and Non-NCC students in Personality traits.



 Hypothesis –

For Male and Female.

2. **H0: Male and Female will same personality factor.**
- H1: Male and Female will differ personality factor.**

Group Statistics for Male and Female					
Factor's	GENDER	N	Mean	Std. Deviation	Std. Error Mean
NEUROTICISM	Male	24	22.71	5.552	1.133
	Female	24	24.58	4.624	0.944
EXTRAVERSION	Male	24	29.92	5.649	1.153
	Female	24	28.71	4.582	0.935
OPENNESS	Male	24	24.46	3.611	0.737
	Female	24	25.42	4.221	0.862
AGREEABLENESS	Male	24	26	5.525	1.128
	Female	24	27.21	4.139	0.845
CONSCIENTIOUSNESS	Male	24	33.71	8.544	1.744
	Female	24	34.79	6.157	1.257

Same formula is applicable for all factor's =

[T test – Two samples]

$$t = \frac{(x_1 - x_2)}{\sqrt{\frac{(s_1)^2}{n_1} + \frac{(s_2)^2}{n_2}}}$$

1. Factor Neuroticism:

Hypothesis. -

$$H_0: \mu_1 = \mu_2 \quad v/s \quad H_1: \mu_1 \neq \mu_2 \quad (\alpha=0.05)$$

$$T_{cal} = -1.2679$$

$$T_{tab} = 2.064$$

$$|T_{cal}| = 1.2679 < T_{tab} = 2.064$$

Ho is accepted

2. Factor Extraversion :

Hypothesis. -

$$H_0: \mu_1 = \mu_2 \quad V/S \quad H_1: \mu_1 \neq \mu_2 \quad (\alpha=0.05)$$

$$T_{cal} = 0.8150 \quad T_{tab} = 2.064$$

$$|T_{cal}| = 0.8150 < T_{tab} = 2.064$$

Ho is accepted

3. Factor Openness:

Hypothesis. -

$$H_0: \mu_1 = \mu_2 \quad V/S \quad H_1: \mu_1 \neq \mu_2 \quad (\alpha=0.05)$$

$$T_{cal} = -0.8467 \quad T_{tab} = 2.064$$

$$|T_{cal}| = 0.8467 < T_{tab} = 2.064$$

Ho is accepted

4. Factor Agreeableness:

Hypothesis. -

$$H_0: \mu_1 = \mu_2 \quad V/S \quad H_1: \mu_1 \neq \mu_2 \quad (\alpha=0.05)$$

$$T_{cal} = -0.8587 \quad T_{tab} = 2.064$$

$$|T_{cal}| = 0.8587 < T_{tab} = 2.064$$

Ho is accepted

5. Factor Conscientiousness:

Hypothesis. -

$$H_0: \mu_1 = \mu_2 \quad V/S \quad H_1: \mu_1 \neq \mu_2 \quad (\alpha=0.05)$$

$$T_{cal} = -0.5024 \quad T_{tab} = 2.064$$

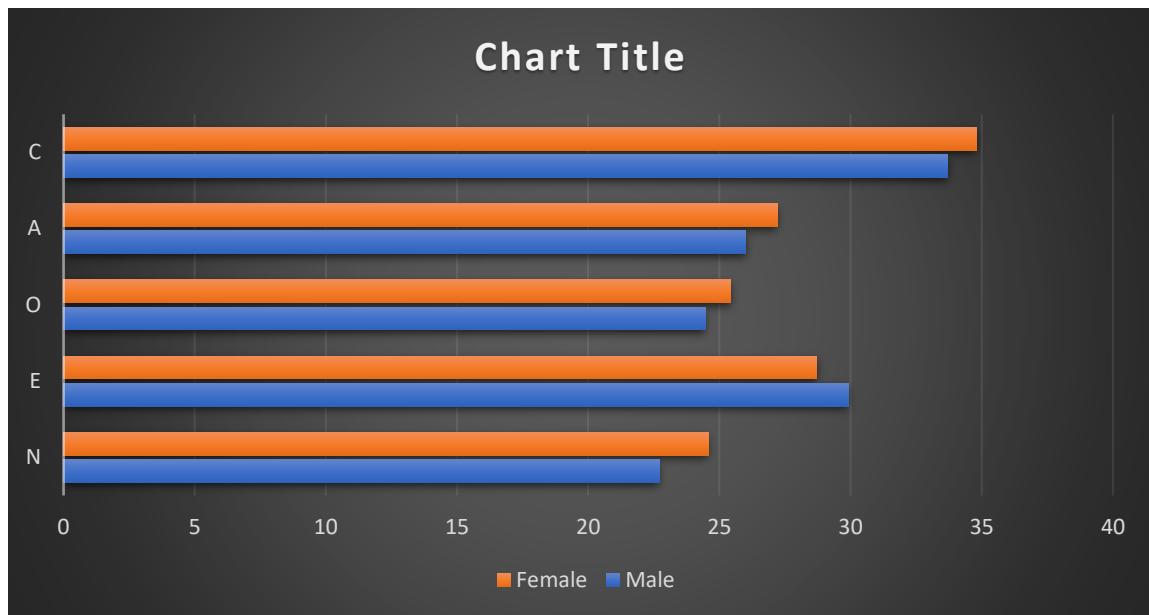
$$|T_{cal}| = 0.5024 < T_{tab} = 2.064$$

Ho is accepted

In all the factor's Ho will accepted.

Therefore, we claimed that.

There is no significant difference between Male and Female in personality traits.



Run Test for Male and Female (Test of randomness) -

N-m	1
no-m	1
N-f	2
N-f	2
no-m	3
N-f	4
N-f	4
no-m	5
no-m	5
N-f	6
No-f	6
No-f	6
N-m	7
N-m	7
No-f	8
N-m	9
N-m	9
No-f	10
No-f	10
N-m	11

No-f	12
No-f	12
no-m	13
no-m	13
No-f	14
No-f	14
n-f	14
n-f	14
n-f	14
no-m	15
no-m	15
no-m	15
N-m	15
n-f	16
n-f	16
no-m	17
No-f	18
no-m	19
no-m	19
No-f	20
N-m	21
N-m	21
N-f	22
N-f	22
No-f	22

Mm ff m ff mm fff mm f mm ff mmmm ff mm ffffff mmmmm ff m f
mm f mm fff

H0: The sample drawn is random.

H1: The sample drawn is not random.

Test stat:

No. of runs. = 22

n1 = No. of females. = 24

$$n_2 = \text{No. of males.} = 24$$

Since n_1 and $n_2 > 20$, we use normal approximation of the test statistics.
Given as,

$$E(r) = (2n_1 * n_2 / (n_1 + n_2)) + 1 = 25$$

$$V(r) = 2 * n_1 * n_2 * (2n_1 * n_2 - 2 * n_1 * n_2 - n_1 - n_2) / ((n_1 + n_2)^2 * (n_1 + n_2 - 1)) = 12.25532$$

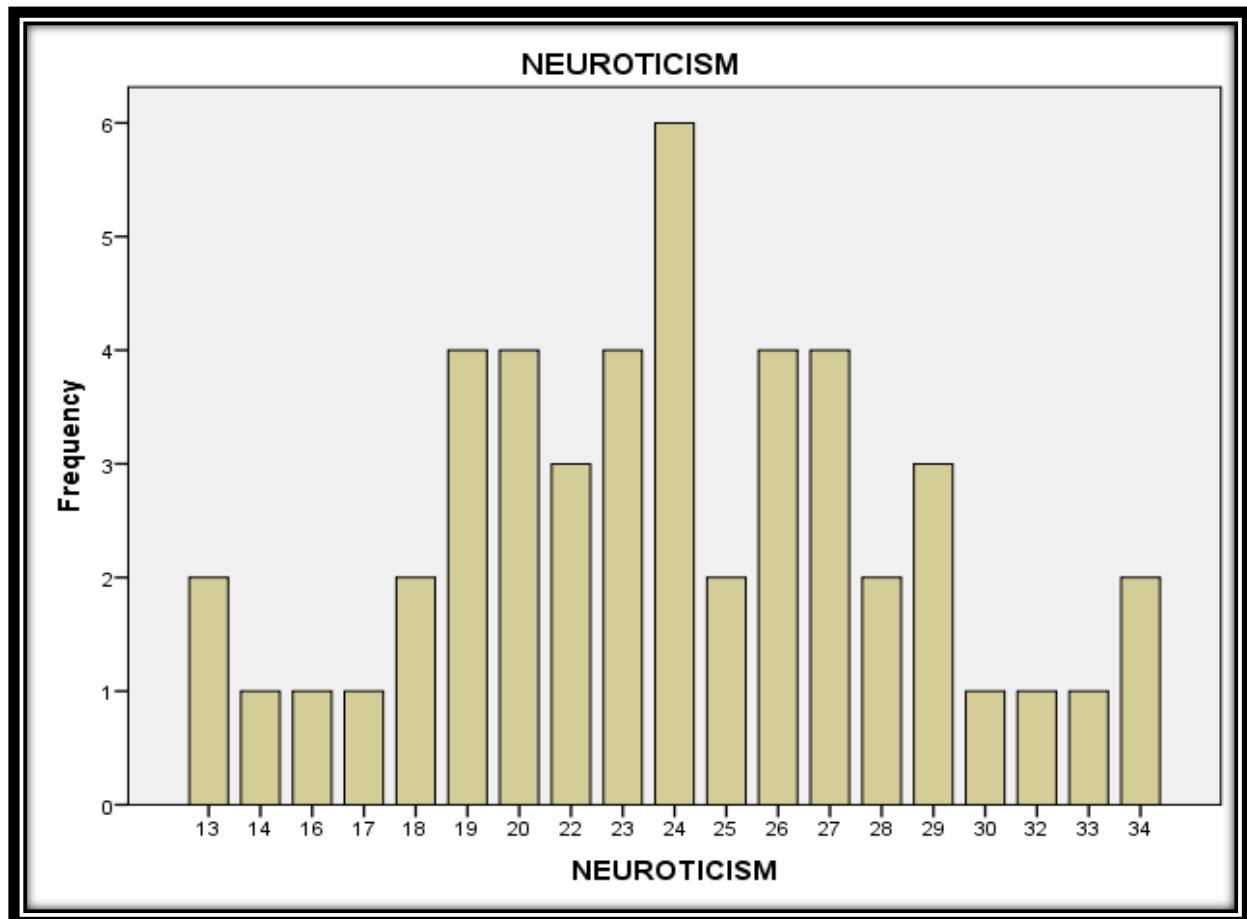
$$Z_{\text{cal}} = r - E(r) / \sqrt{V(r)} = -0.85696 \quad (\text{alpha} = 0.05)$$

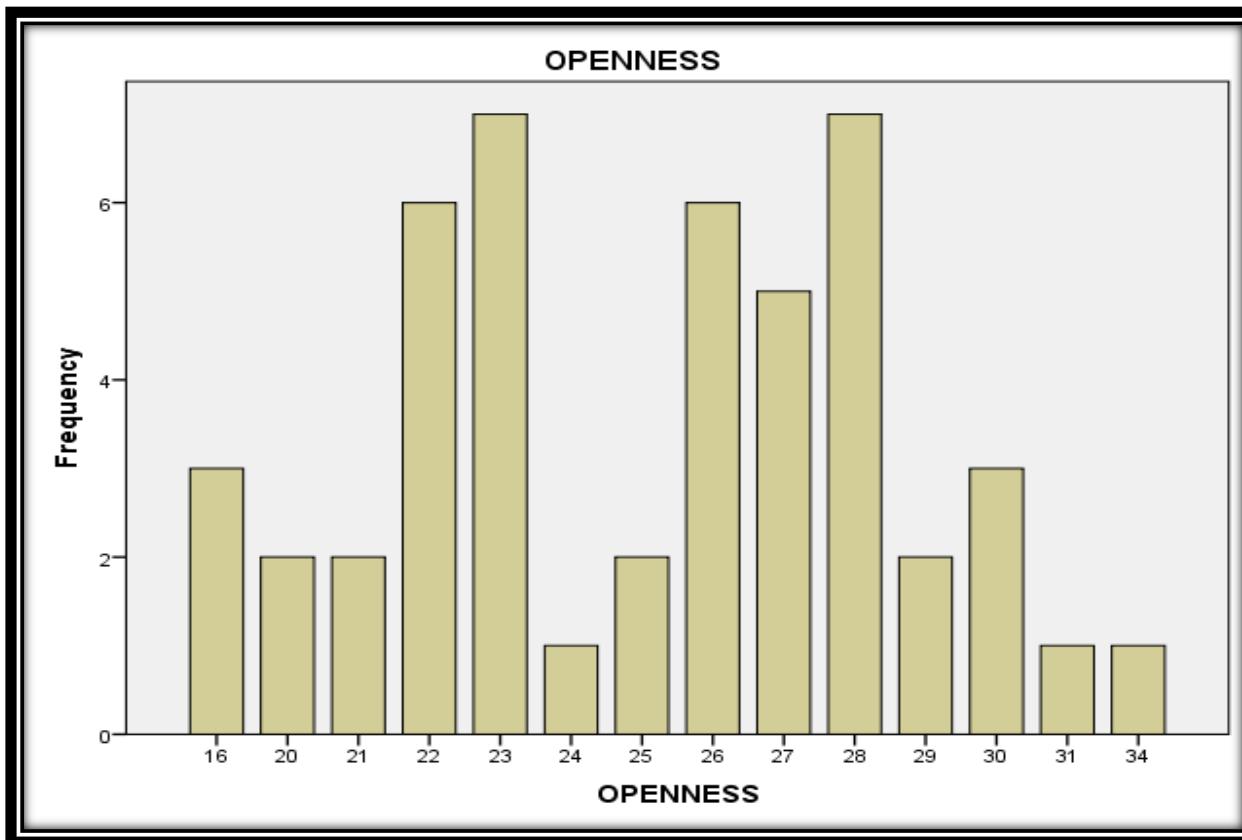
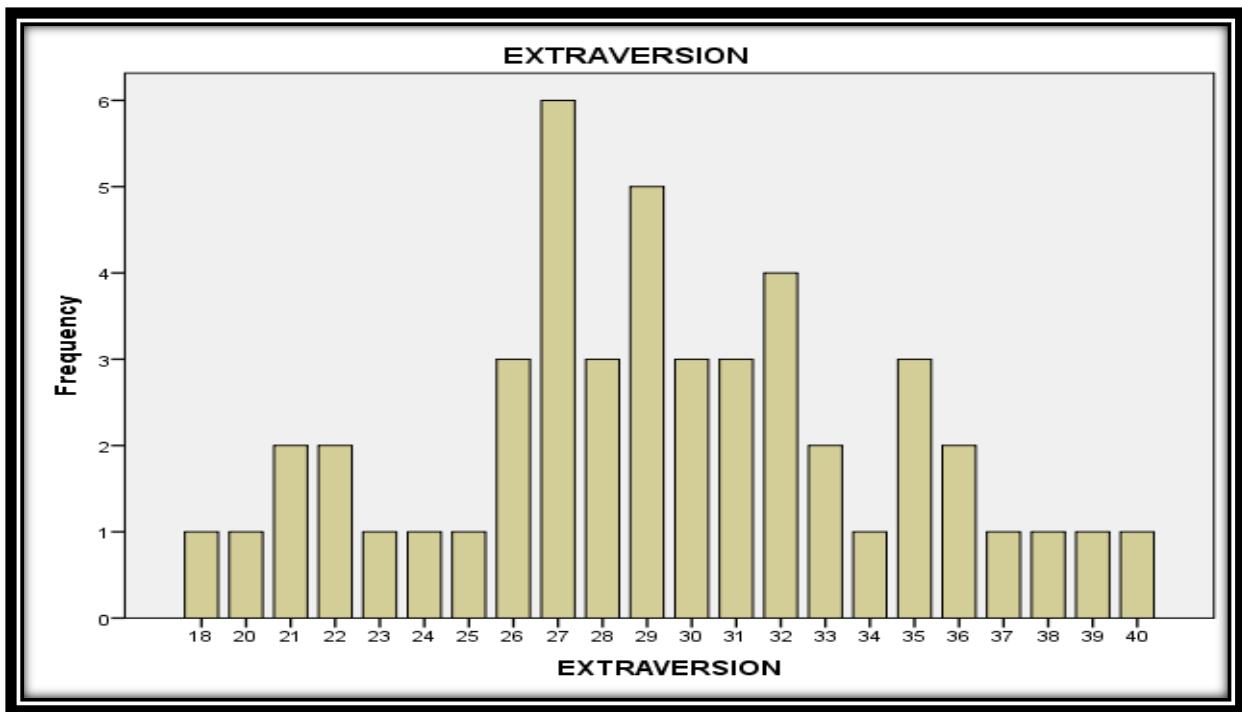
$$Z(\alpha/2) = -0.67449 - |Z(\alpha/2)| = 0.67449$$

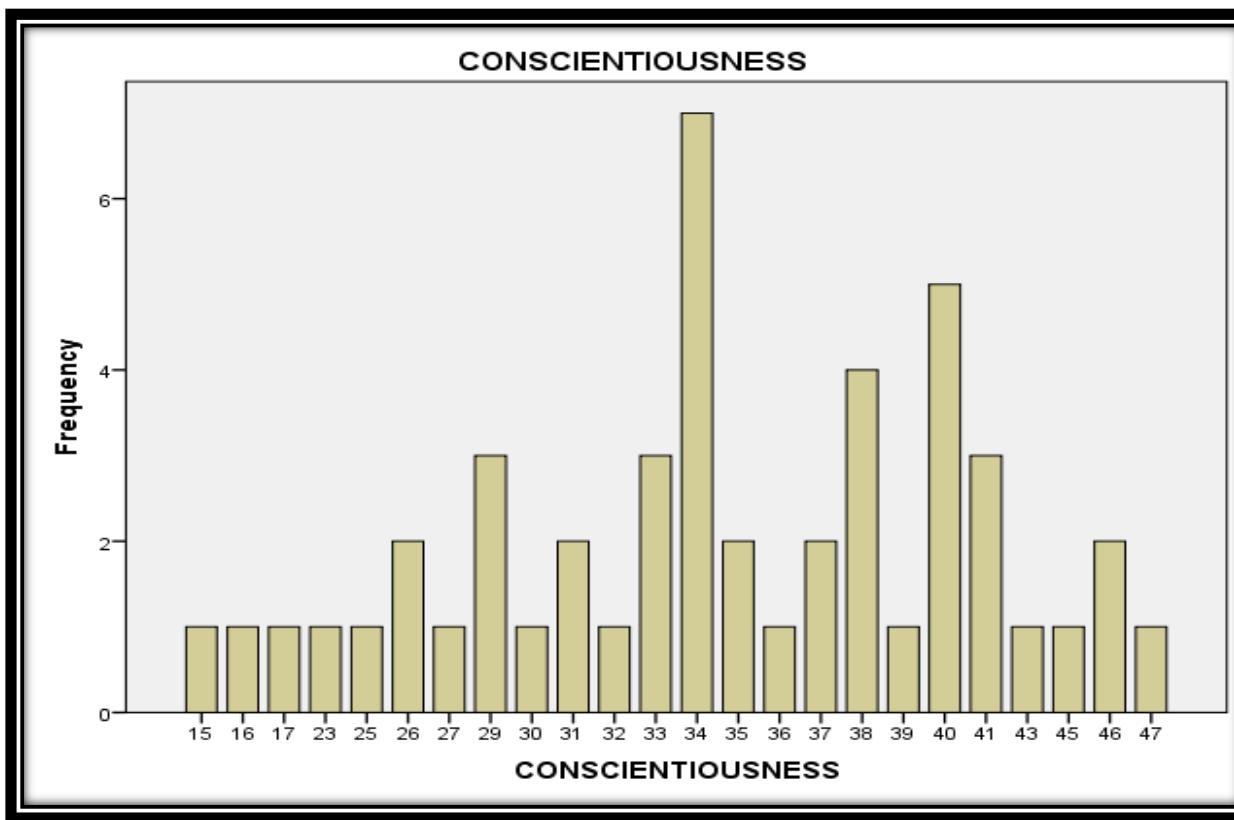
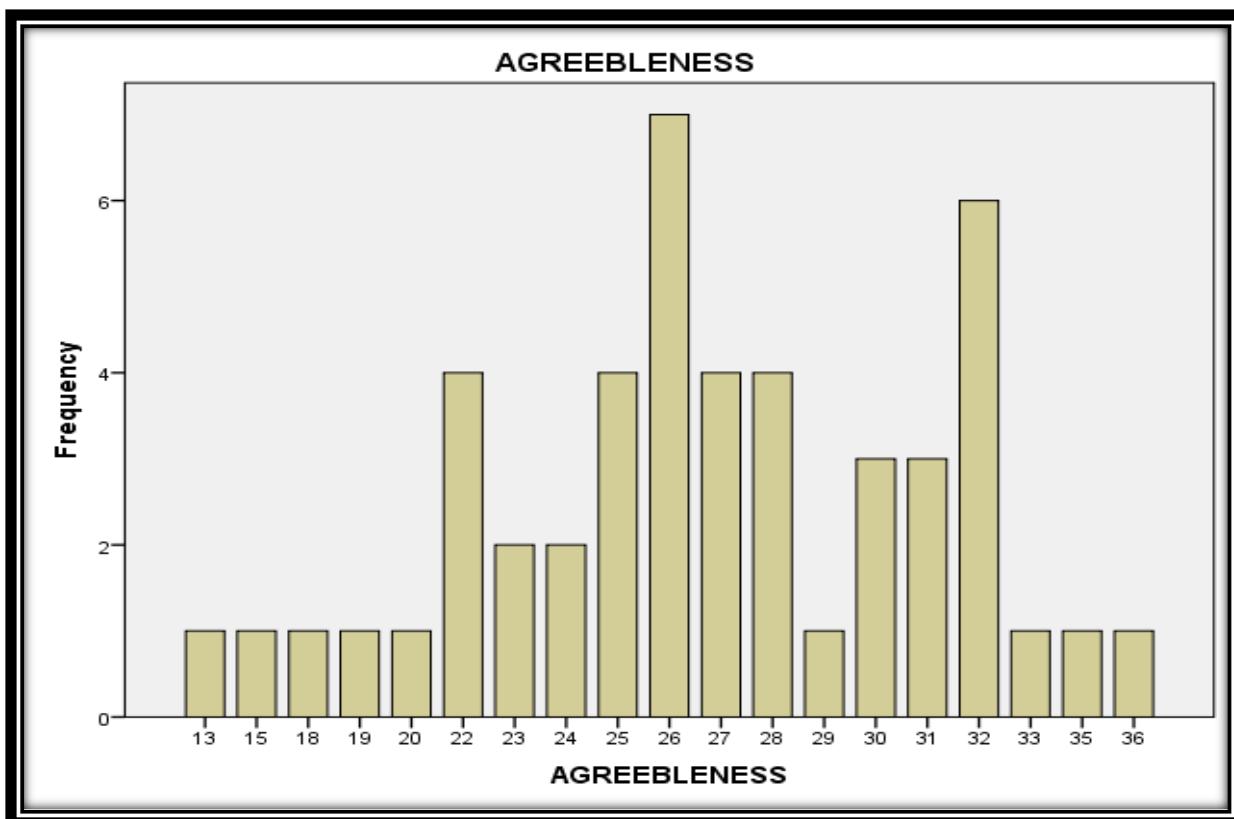
Hence, accept H_0

The sample drawn is random.

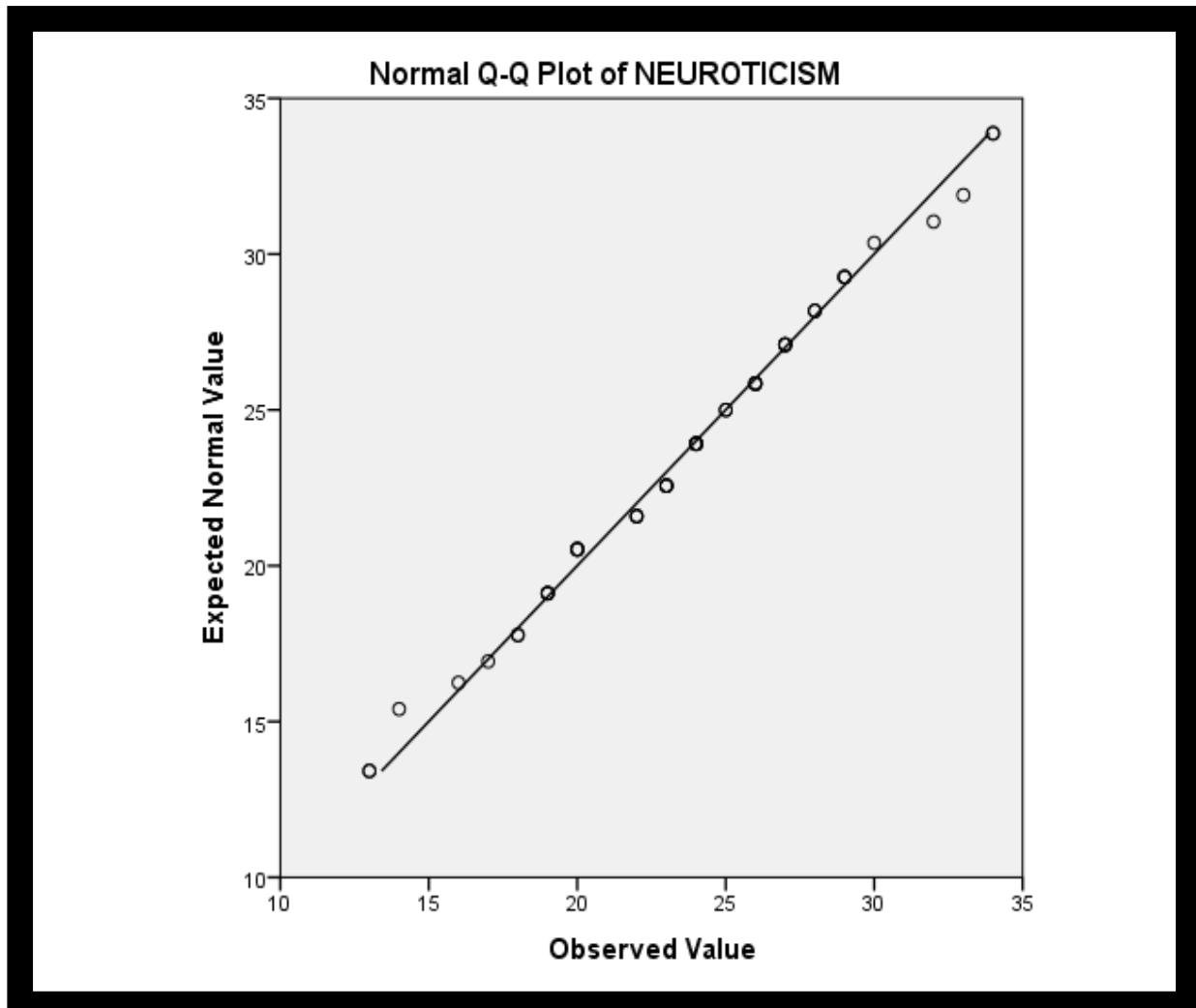
➤ **Histogram's -**

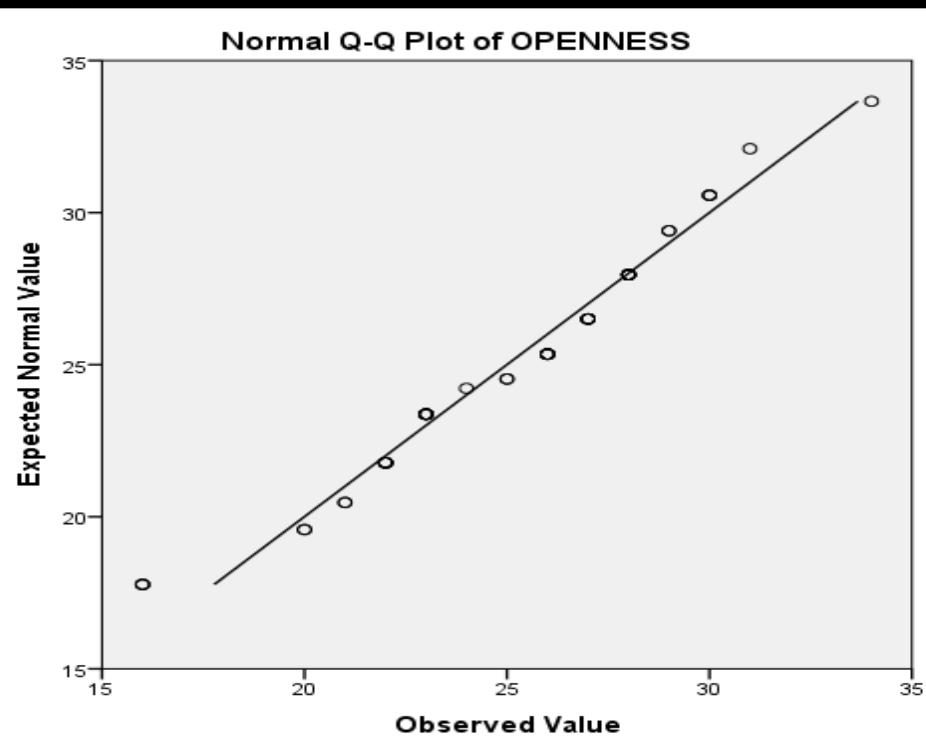
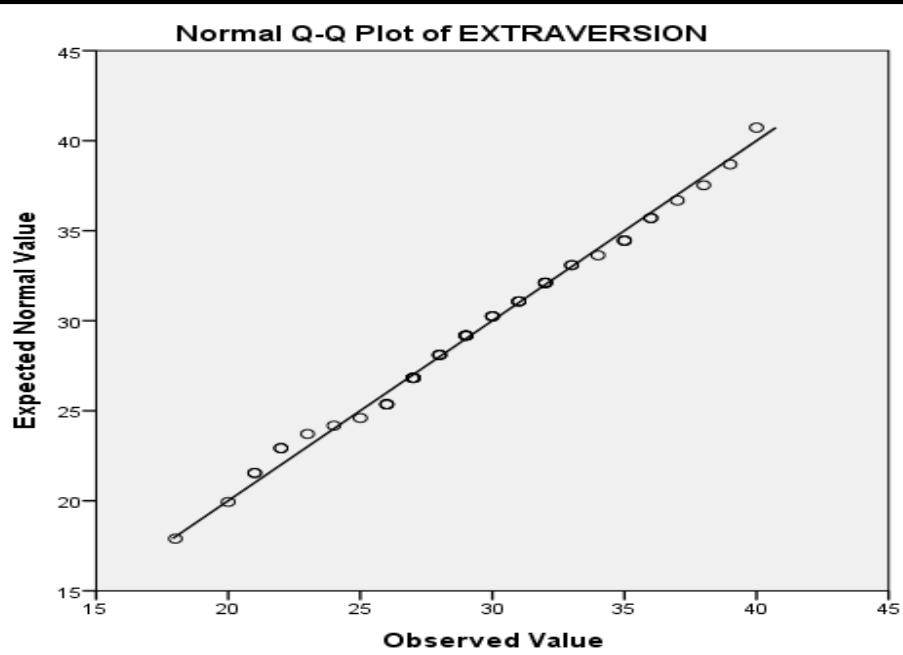


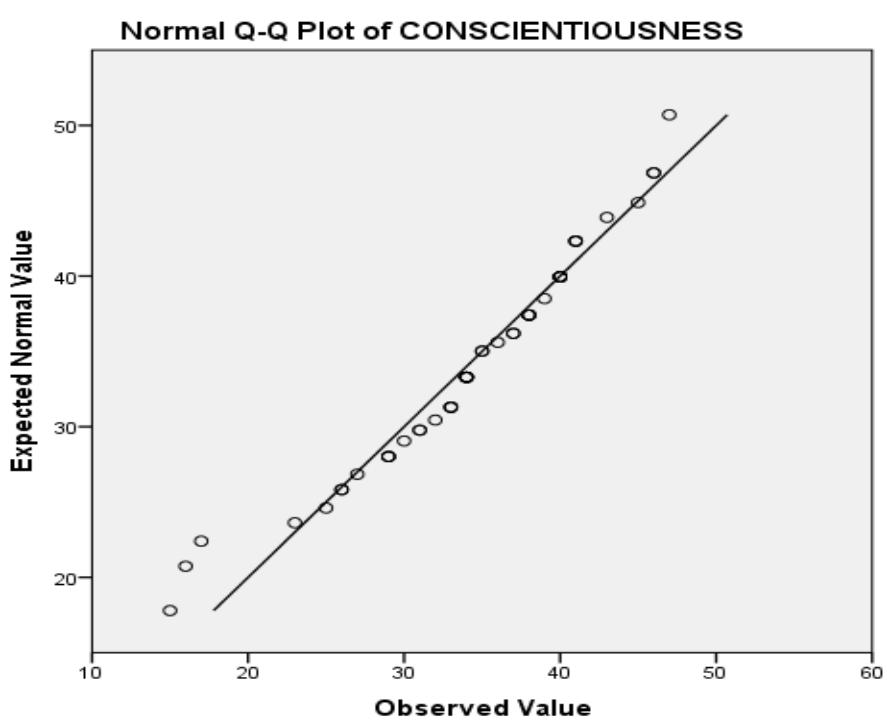
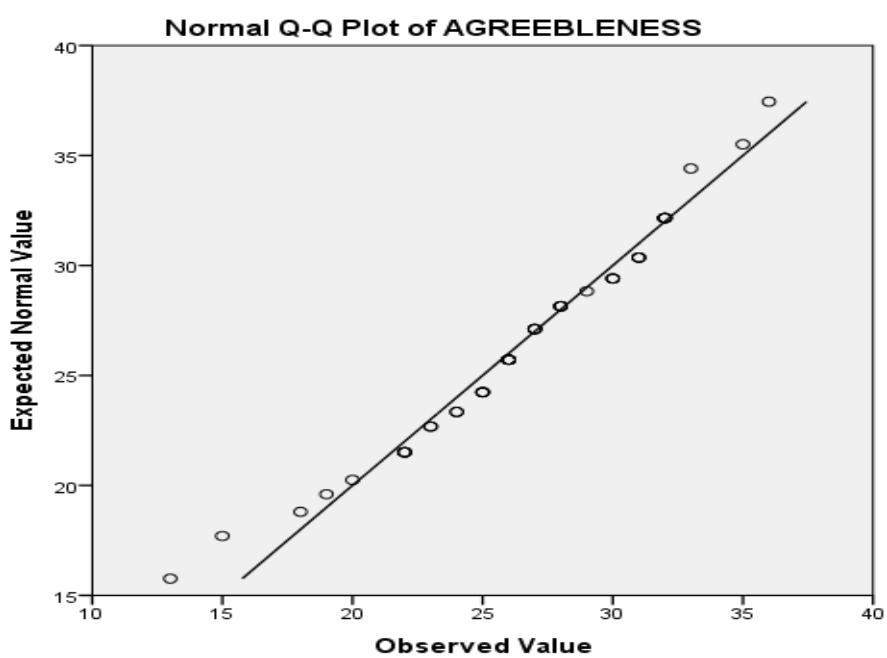




➤ **Q-Q Plot -**







Reference :-

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