Descriptive Statistics and Normality- A Psychological Assessment of Adolescence - Girls and Boys

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Abstract:
This research paper presents a comprehensive analysis of the descriptive statistics and normality assessment of various psychological scales used in the study. The study involves 400 participants, and data from multiple scales, including the Big Five Personality Inventory, Well-Being Index, and Perception of Competence in Life Domains Scale, were analyzed. Descriptive statistics, including measures such as mean, standard deviation, skewness, and kurtosis, were computed for each item within the scales. The paper discusses the results of the analysis, highlighting the range, mean values, distribution shapes, and normality assessment of the data.
Keywords: descriptive statistics, normality assessment, psychological scales, Big Five Personality Inventory, Well-Being Index, Perception of Competence, distribution characteristics.

Introduction:

Statistical analysis is a crucial step in understanding the distribution and characteristics of data collected through psychological scales. This paper aims to provide a detailed overview of the descriptive statistics and normality assessment conducted on data from various psychological scales. The scales used include the Big Five Personality Inventory, Well-Being Index, and Perception of Competence in Life Domains Scale.

The present research paper delves into the analysis of data collected from a study involving 500 subjects, focusing on the measurement of well-being, perception of competence, and personality traits. This phase of the research employs descriptive statistics to provide insights into the distribution and characteristics of the collected data. The study encompasses three main constructs: well-being, perception of competence in various life domains, and personality traits based on the Big Five personality inventory.

The first segment of the analysis focuses on well-being, as measured by a set of five statements. Each statement's range, minimum, maximum, mean, standard deviation, skewness, and kurtosis statistics are presented. These results indicate that the well-being scores are normally distributed, as skewness and kurtosis values fall within acceptable thresholds.

Subsequent sections provide similar analyses for the perception of competence in various life domains and the dimensions of the Big Five personality traits: extroversion, agreeableness, consciousness, neuroticism, and openness. For each construct, the analysis follows a consistent pattern, evaluating the distribution of scores for each individual statement and the overall construct.

This research paper contributes to the understanding of the distribution of scores related to well-being, competence perception, and personality traits among the study participants. The results underscore the importance of conducting initial data screening to ensure that subsequent analyses are based on data that meet the assumptions of normal distribution. These insights serve as a foundation for deeper investigations into the interrelationships between these constructs, shedding light on the complex interplay between psychological well-being, perception of competence, and personality traits.

Procedure and Methods:

The data collected from 400 participants were subjected to data screening, and descriptive statistics were computed for each item within the scales. Descriptive statistics included measures of central tendency (mean), variability (standard deviation), distribution shape (skewness), and tail behavior (kurtosis). Additionally, normality assessment was conducted using established thresholds for skewness and kurtosis values.

Results:

Table 1: Descriptive Statistics of Well Being Index

	N	Range	Min.	Maxi.	Mean	Std. Devi.	Skewness		Kurtosis	
	Stat.	Stat.	Stat.	Stat.	Stat.	Stat.	Stat.	Std. Er	Stat.	Std. Error
Q1	400	5.00	.00	5.00	2.49	1.54	.004	.109	-1.161	.218
Q2	400	5.00	.00	5.00	2.42	1.62	.014	.109	-1.209	.218
Q3	400	5.00	.00	5.00	2.98	1.51	-.392	.109	-.878	.218
Q4	400	5.00	.00	5.00	3.11	1.57	-.445	.109	-.951	.218
Q5	400	5.00	.00	5.00	2.89	1.63	-.179	.109	-1.232	.218
Total	400	100.00	.00	100.00	55.64	21.68	-.127	.109	-.335	.218
Valid N (listwise)	400									

Table 1: shows the descriptive statistics of the each question of the well-being. Statements 1-5 measuring that participants well-being has range from 0 to 5, mean value of 2.49± 1.54, 2.42± 1.62, 2.98 ± 1.51,3.11 ± 1.57 and 2.89 ± 1.63 whereas, total mean value of well-being 55.64 ± 21.63, respectively.
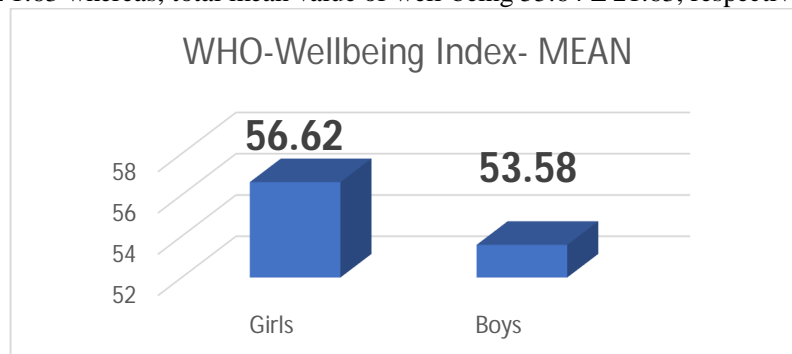

Figure -1.Graphical presentation of Perception of Competence of Life Domain Scale (PCLDS) between the Girls and Boys

Table 2: Descriptive statistics of PCLD -Perception of General Competence

	N	Rang	Min.	Max.	Mean	Std. Devi	Skewness		Kurtosis	
	Stat.	Stat.	Stat.	Stat.	Stat.	Stat.	Stat.	Std. Error	Stat.	Std. Error
Q1	400	6.00	1.00	7.00	3.50	1.97	.331	.109	-1.020	.218
Q5	400	6.00	1.00	7.00	3.94	1.97	-.022	.109	-1.185	.218
Q9	400	6.00	1.00	7.00	3.87	1.87	.104	.109	-1.049	.218
Q13	400	6.00	1.00	7.00	3.79	1.83	.033	.109	-1.037	.218
Total	400	24.00	4.00	28.00	15.12	5.08	.033	.109	-.274	.218
Valid N (listwis	400									

Table 2: shows the descriptive statistics of the each question of the Perception of General Competence. Statements 1,5,9 and 13 measuring that participants perception of general competence has range from 1 to 6, mean value of 3.50± 1.97, 3.94 ± 1.97, 3.87 ± 1.87 and 3.79 ± 1.83, respectively.
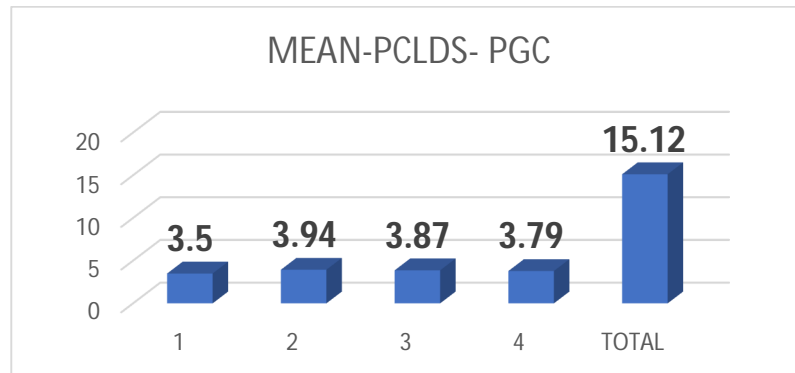
Figure -1.Graphical presentation of Perception of Competence of Life Domain Scale - Perception of General Competence

Table 3: Descriptive Statistics of Perception of Academic Competence

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Q2	400	6.00	1.00	7.00	3.30	1.88	.391	.109	-.978	.218
Q6	400	6.00	1.00	7.00	4.59	1.86	-.415	.109	-.883	.218
Q10	400	6.00	1.00	7.00	3.72	1.97	.100	.109	-1.161	.218
Q14	400	6.00	1.00	7.00	4.93	1.84	-.652	.109	-.547	.218
Total	400	24.00	4.00	28.00	16.50	4.74	-.114	.109	.206	.218
Valid N (listwise)	400									

Table 3: shows the descriptive statistics of the each question of the Perception of Academic Competence. Statements 2,6,10 and 14 measuring that participants perception of academic competence has range from 1 to 7, mean value of 3.30 ± 1.88, 4.59 ± 1.86, 3.72 ± 1.97 and 4.93 ± 1.84, respectively.
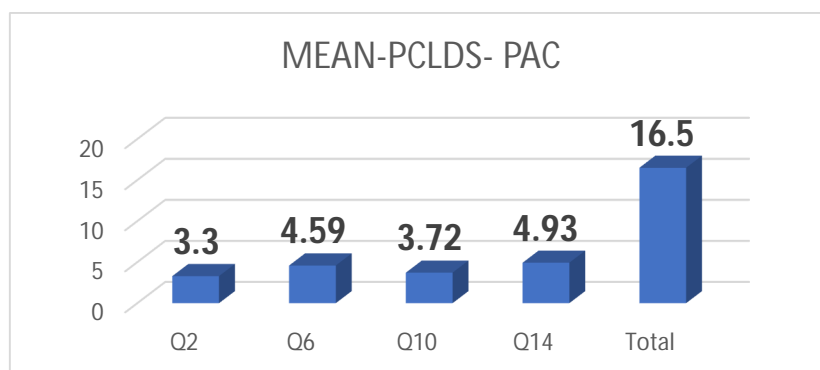

Table 4: Descriptive Statistics of dimensions of Personality- Extroversion

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Q1	400	4.00	1.00	5.00	3.14	1.36	-.185	.109	-1.172	.218

Q6	400	4.00	1.00	5.00	2.86	1.28	.201	.109	-.952	.218
Q11	400	4.00	1.00	5.00	3.67	1.31	-.680	.109	-.712	.218
Q16	400	4.00	1.00	5.00	3.51	1.21	-.462	.109	-.685	.218
Q21	400	4.00	1.00	5.00	2.68	1.34	.374	.109	-1.010	.218
Q26	400	4.00	1.00	5.00	3.59	1.22	-.511	.109	-.659	.218
Q31	400	4.00	1.00	5.00	2.62	1.27	.353	.109	-.950	.218
Q36	400	4.00	1.00	5.00	3.34	1.33	-.342	.109	-.991	.218
Total	400	27.00	11.00	38.00	25.43	4.22	-.035	.109	.129	.218
Valid N (listwise)	400									

Table 4: shows the descriptive statistics of each question of dimension extroversion from the Big five personality Inventory. Statements 1,6,11,16,21,31 and 36assessed the participants Extroversion, values had ranged from 1 to 5, mean value of 3.14± 1.36, 2.86 ± 1.28, 3.67 ± 1.31, 3.51 ± 1.21,2.68 ± 1.34, 3.59 ± 1.22, 2.62 ± 1.27and 3.34 ± 1.33, respectively.

Table 5: Descriptive Statistics Dimensions of Personality- Consciousness

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Q3	400	4.00	1.00	5.00	3.09	1.36	-.172	.109	-1.121	.218
Q8	400	4.00	1.00	5.00	3.11	1.32	-.042	.109	-1.185	.218
Q13	400	4.00	1.00	5.00	3.47	1.35	-.465	.109	-.959	.218
Q18	400	4.00	1.00	5.00	3.13	1.24	-.007	.109	-.967	.218
Q23	400	4.00	1.00	5.00	3.01	1.37	.050	.109	-1.198	.218
Q28	400	4.00	1.00	5.00	3.62	1.24	-.643	.109	-.525	.218
Q33	400	4.00	1.00	5.00	3.53	1.27	-.564	.109	-.688	.218
Q38	400	4.00	1.00	5.00	3.32	1.30	-.340	.109	-.969	.218
Q43	400	4.00	1.00	5.00	2.99	1.36	.079	.109	-1.231	.218
Total	400	32.00	13.00	45.00	29.29	5.59	.235	.109	.155	.218
Valid N (list wise)	400									

Table 8: shows the descriptive statistics of each question of dimension consciousness from the Big five personality Inventory. Statements 3,8,13,18,23,28,33,38 and 43 assessed the participants consciousness, values had ranged from 1 to 5, mean value of 3.09± 1.36, 3.11 ± 1.32, 3.47 ± 1.35, 3.13 ± 1.24, 3.01 ± 1.37, 3.62 ± 1.24, 3.53 ± 1.27, 3.32 ± 1.30and 2.99 ± 1.36, respectively.

Table 9: Descriptive Statistics Dimensions of Personality -Neuroticism

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error

Q4	**400**	4.00	1.00	5.00	2.63	1.36	.287	.109	-1.174	.218
Q9	**400**	4.00	1.00	5.00	2.62	1.36	.325	.109	-1.137	.218
Q14	**400**	4.00	1.00	5.00	3.13	1.35	-.180	.109	-1.152	.218
Q19	**400**	4.00	1.00	5.00	3.15	1.36	-.135	.109	-1.171	.218
Q24	**400**	4.00	1.00	5.00	2.79	1.40	.211	.109	-1.235	.218
Q29	**400**	4.00	1.00	5.00	3.48	1.33	-.455	.109	-.935	.218
Q34	**400**	4.00	1.00	5.00	2.59	1.05	.232	.109	-.516	.218
Q39	**400**	4.00	1.00	5.00	3.30	1.38	-.323	.109	-1.163	.218
Total	**400**	27.00	10.00	37.00	23.73	4.78	-.009	.109	-.275	.218
Valid N (list wise)	**400**									

Table 9: shows the descriptive statistics of each question of dimension Neuroticism from the Big five personality Inventory. Statements 4,9,14,19,24,29,34 and 39 assessed the participants Neuroticism, values had ranged from 1 to 5, mean value of 2.63 ± 1.36, 2.62 ± 1.36, 3.13 ± 1.35, 3.15 ± 1.36, 3.15 ± 1.36, 2.79 ± 1.40, 3.48 ± 1.33, 2.59 ± 1.05 and 3.30 ± 1.38, respectively.

Table 10: Descriptive Statistics Dimensions of Personality -Openness

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Q5	**400**	4.00	1.00	5.00	3.61	1.26	-.644	.109	-.580	.218
Q10	**400**	4.00	1.00	5.00	3.72	1.30	-.716	.109	-.655	.218
Q15	**400**	4.00	1.00	5.00	3.58	1.27	-.602	.109	-.635	.218
Q20	**400**	4.00	1.00	5.00	3.82	1.25	-.807	.109	-.444	.218
Q25	**400**	4.00	1.00	5.00	3.57	1.19	-.557	.109	-.481	.218
Q30	**400**	4.00	1.00	5.00	3.49	1.27	-.502	.109	-.729	.218
Q35	**400**	4.00	1.00	5.00	2.43	1.28	.596	.109	-.683	.218
Q40	**400**	4.00	1.00	5.00	3.64	1.24	-.671	.109	-.531	.218
Q41	**400**	4.00	1.00	5.00	2.51	1.33	.473	.109	-.939	.218
Q44	**400**	4.00	1.00	5.00	3.32	1.30	-.294	.109	-.950	.218
Total	**400**	26.00	20.00	46.00	33.72	4.82	-.389	.109	-.117	.218
Valid N (listwise)	**400**									

Table 10: shows the descriptive statistics of each question of dimension openness from the Big five personality Inventory. Statements 5,10,15,20,25,30,35,40,41 and 44 assessed the participants openness, values had ranged from 1 to 5, mean value of 3.61 ± 1.26, 3.72 ± 1.30, 3.58 ± 1.27, 3.82 ± 1.25, 3.57 ± 1.19, 3.49 ± 1.27, 2.43 ± 1.28, 3.64 ± 1.24 and 2.51 ± 1.33, and 3.32 ± 1.30, respectively.
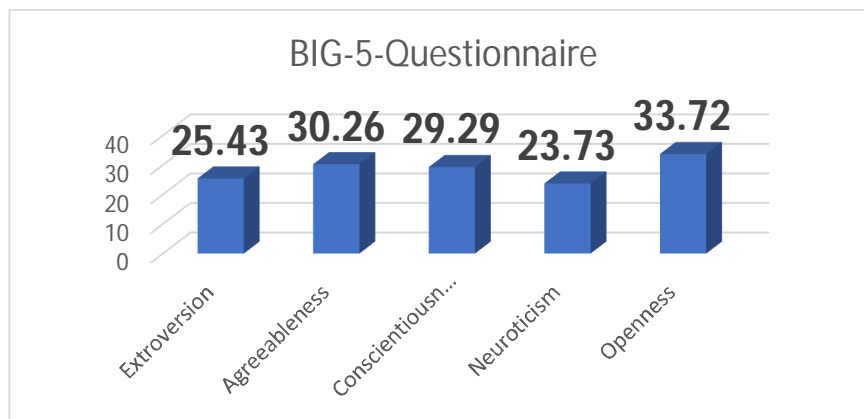
Figure - 2: Graphical presentation of Big five personality Questionnaire of all subjects

The Big five personality Questionnaire of all subjects, shown 33.72 score for Openness quality, 30.26 score for Agreeableness, 29.29 score for conscientiousness, 25.43 score for Extroversion and 23.73 score for Neuroticism

The results of the descriptive statistics and normality assessment for each scale and its respective dimensions are presented in Tables 1 to 10. The findings include the following key points:

Well-Being Index: The mean scores for each question ranged from 2.42 to 3.11, with a total mean well-being score of 55.64. Skewness and kurtosis values indicated that the data were normally distributed, as they fell within the acceptable thresholds.

Perception of Competence in Life Domains: Similar to the well-being scale, the data for this scale's dimensions exhibited normal distribution characteristics, as skewness and kurtosis values were within acceptable ranges.

Dimensions of Personality (Extroversion, Agreeableness, Consciousness, Neurotism, and Openness): Each dimension's questions showed varying means and distribution shapes. Despite some questions showing slightly skewed or kurtosis distributions, the overall dimensions demonstrated relatively normal distributions.

Discussion:

The descriptive statistics and normality assessment provide insights into the distribution characteristics of the data collected from the psychological scales. The findings suggest that the data generally adhere to the assumptions of normality, which is essential for subsequent analyses such as intercorrelations between variables. However, some questions within the scales exhibited slight departures from normality, which might warrant further investigation in future studies.

Conclusion:

This research paper presented a detailed analysis of descriptive statistics and normality assessment for various psychological scales used in the study. The results indicate that the data collected from the scales generally exhibit normal distribution characteristics, facilitating reliable intercorrelation analyses. Understanding the distribution properties of the data is vital for making accurate inferences and drawing meaningful conclusions from psychological research.

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