Normality Test

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Normality Test

- One of the major assumption for parametric statistics is data in the population must be normally distributed
- How to check whether your data meet the above assumption?
- Use Exploratory Data Analysis (EDA) in SPSS
- SPSS provides two statistics:
  1. Kolmogorov-Smirnov
  2. Shapiro-Wilk

- You data meet the assumption of normality
  - If the sig-value > alpha (.05)
- In addition, SPSS also produces Normality Plots:
  - Normal Q-Q Plot
  - Detrended Normal Q-Q Plot
- You data can be considered to be normally distributed
  - If majority of the points in the Detrended Normal Q-Q plot are within -.3 and +.3
- Data can be considered normal if skewness is between -1 and +1. However values between ±2 are in many cases acceptable (George, D and Mallery, P, 2005)

Skew is the tilt (or lack of it) in a distribution. The more common type is right skew, where the tail points to the right. Less common is left skew, where the tail is points left. A common rule-of-thumb test for normality is to run descriptive statistics to get skewness and kurtosis, then divide these by the standard errors. Skew should be within the +2 to -2 range when the data are normally distributed. Some authors use +1 to -1 as a more stringent criterion when normality is critical.

http://faculty.chass.ncsu.edu/garson/PA765/assumpt.htm#normal


Practice Data 1.sav - SPSS Data Editor
File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help
Reports
Explore
Explore
Explore: Plots
Explore: Plots
Explore
OK
Paste
X8
X9
att1
att2
att3
att4
att5
att6
att7
Attitude
Dependent List:
y
Factor List:
Label Cases by:
OK
Paste
Reset
Cancel
Help
Display
Both Statistics Plots
Statistics...
Plots...
Options...

Descriptives

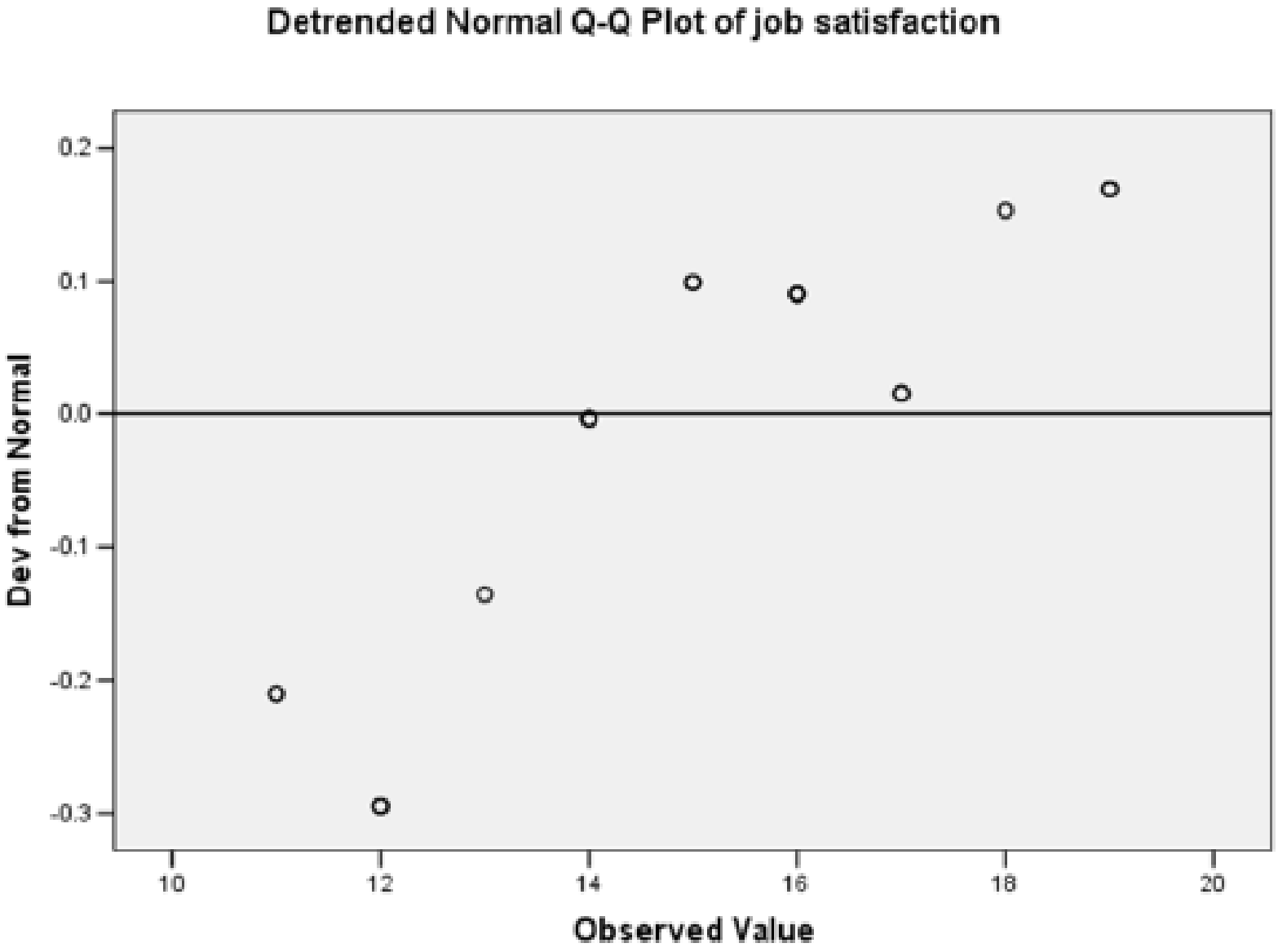
			Statistic	Std. Error
y	Mean		15.0500	.54035
	95% Confidence Interval for Mean	Lower Bound	13.9190	
		Upper Bound	16.1810	
	5% Trimmed Mean		15.0556	
	Median		15.5000	
	Variance		5.839	
	Std. Deviation		2.41650	
	Minimum		11.00	
	Maximum		19.00	
	Range		8.00	
	Interquartile Range		3.50	
	Skewness		-.139	.512
	Kurtosis		-.726	.992

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
y	.153	20	.200*	.952	20	.406

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction


Detrended Normal Q-Q Plot of job satisfaction
Dev from Normal
0.2
0.1
0.0
-0.1
-0.2
-0.3
10
12
14
16
18
20
Observed Value

Data Set 3:

The above data set comprises the following variables:

Variables	Item
Support from Peers	S1 – S9
Work environment	W1 – W11
Motivation	M1 – M12
Job Performance (Y)	J1 – J13

Question

Test the normality assumption of the following variables:

- Support
- Work
- Motive
- Perform

State your conclusion and justify your answer

Table 1: Normality Test of Study Instruments

Instrument	Kolmogorov	*p*
Support from Peers	———	———
Work environment	———	———
Motivation	———	———
Job Performance	———	———

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