

Chapter 2

Exploring the Data

Table 2.1 The *Royer* second-grade addition scores

47	50	50	69	72	74	76	82	82	83
84	85	88	89	89	90	93	94	94	94
94	95	95	100	100	100	100	100		

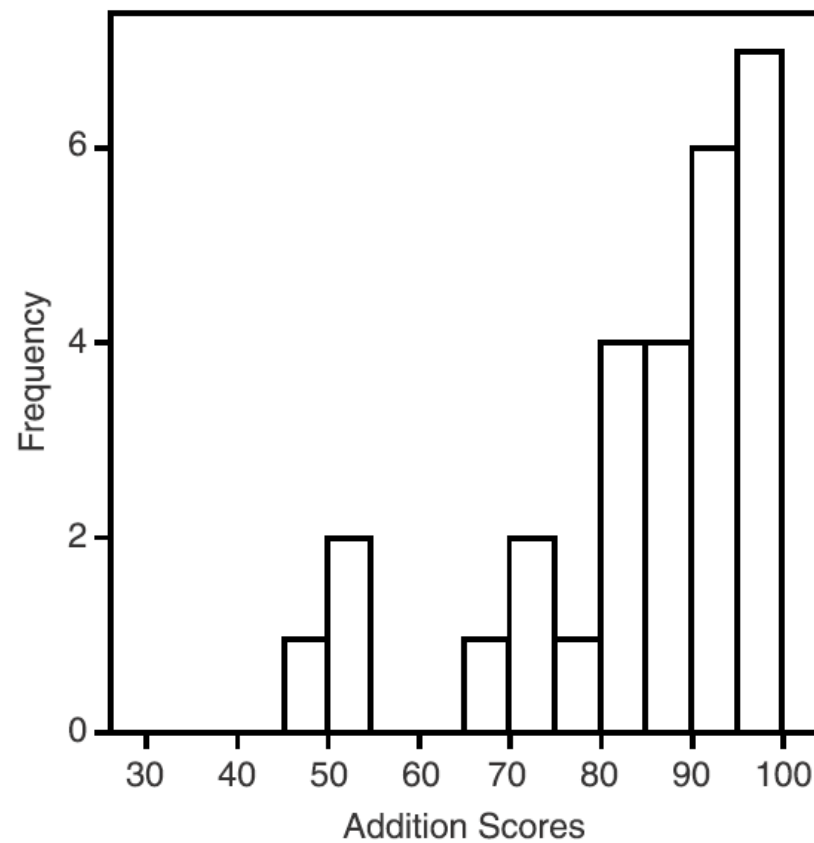


Fig. 2.1 Histogram of the data in Table 2.1.

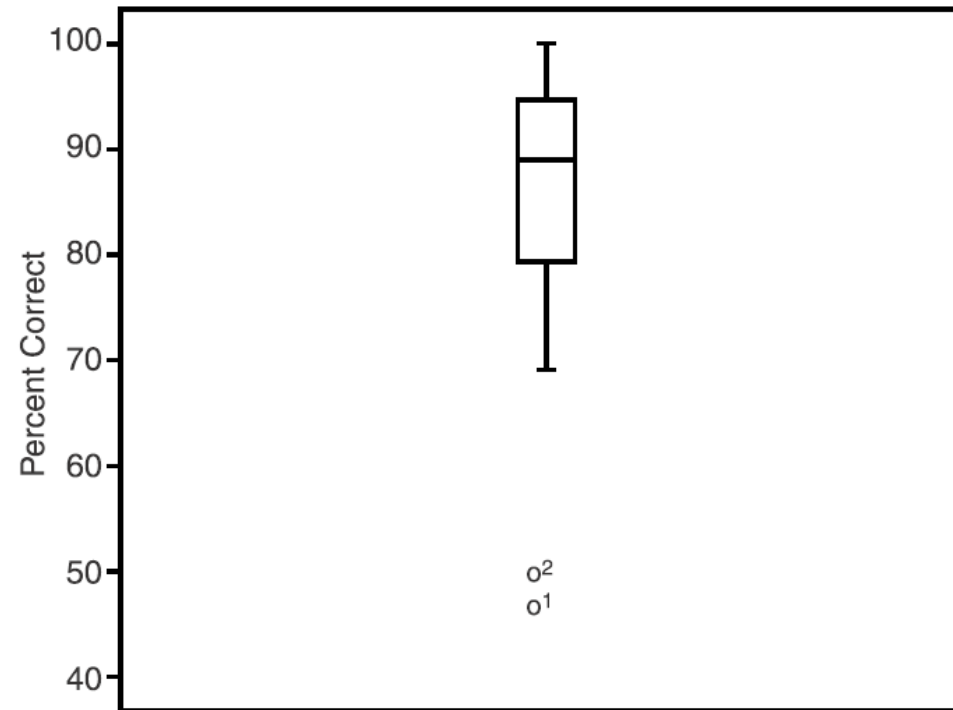


Fig. 2.2 Box plot of the data in Table 2.1.

ADD_ACC Stem-and-Leaf Plot

Frequency Stem & Leaf

3.00 Extremes (= <50)

1.00 6 . 9

2.00 7 . 24

1.00 7 . 6

4.00 8 . 2234

4.00 8 . 5899

6.00 9 . 034444

2.00 9 . 55

5.00 10 . 00000

Stem width: 10

Each leaf: 1 case(s)

Fig. 2.3 Stem-and-leaf plot of the data of Table 2.1.

X Stem-and-Leaf Plot

Frequency Stem & Leaf

2.00 Extremes (= \leq 182)
4.00 2 . 7788
5.00 3 . 22244
15.00 3 . 667777777789999
8.00 4 . 00234444
9.00 4 . 667778899
3.00 5 . 112
2.00 5 . 89
1.00 6 . 2
1.00 Extremes (\geq 749)

Stem width: 100

Each leaf: 1 case(s)

Fig. 2.4 Stem-and-leaf plot of a data set (X).

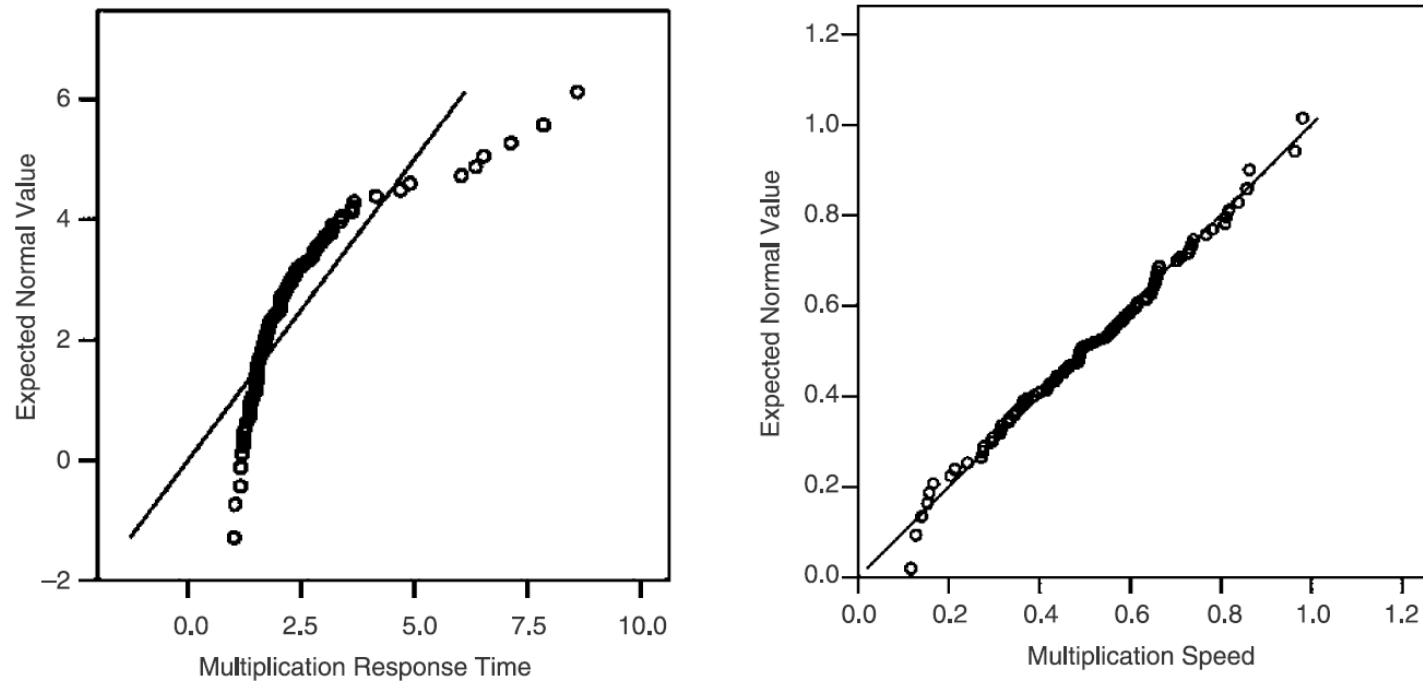


Fig. 2.5 Normal probability plots ($Q-Q$) of multiplication response times and speeds.

Table 2.2 Summary statistics for the data of Table 2.1

	Statistic	Std. error
Mean	84.61	2.89
95% Confidence interval for mean	Lower bound	78.68
	Upper bound	90.54
5% Trimmed mean	85.79	
Median	89.00	
Variance	234.025	
Std. deviation	15.298	
Minimum	47	
Maximum	100	
Range	53	
Interquartile range	17.25	
Skewness	-1.326	.441
Kurtosis	1.124	.858

Table 2.3 Example of means based on different sample sizes

	Clinics			
	A	B	C	D
Mean	17.5	18.3	19.2	22.6
<i>n</i>	26	17	31	24

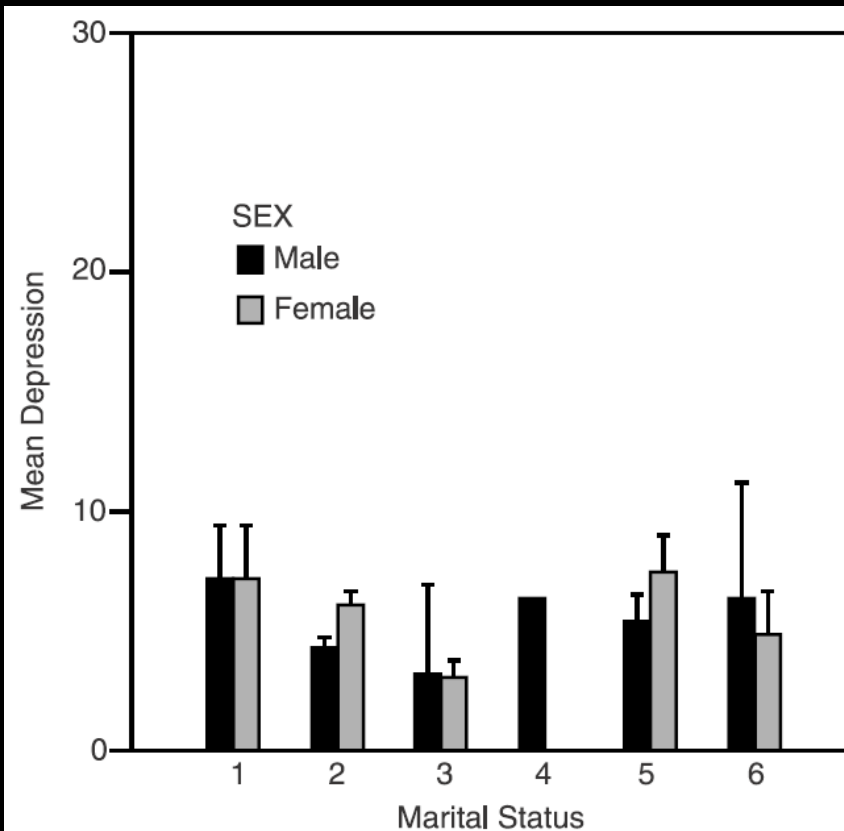


Fig. 2.6 Bar graph of mean depression scores as a function of sex and marital status.

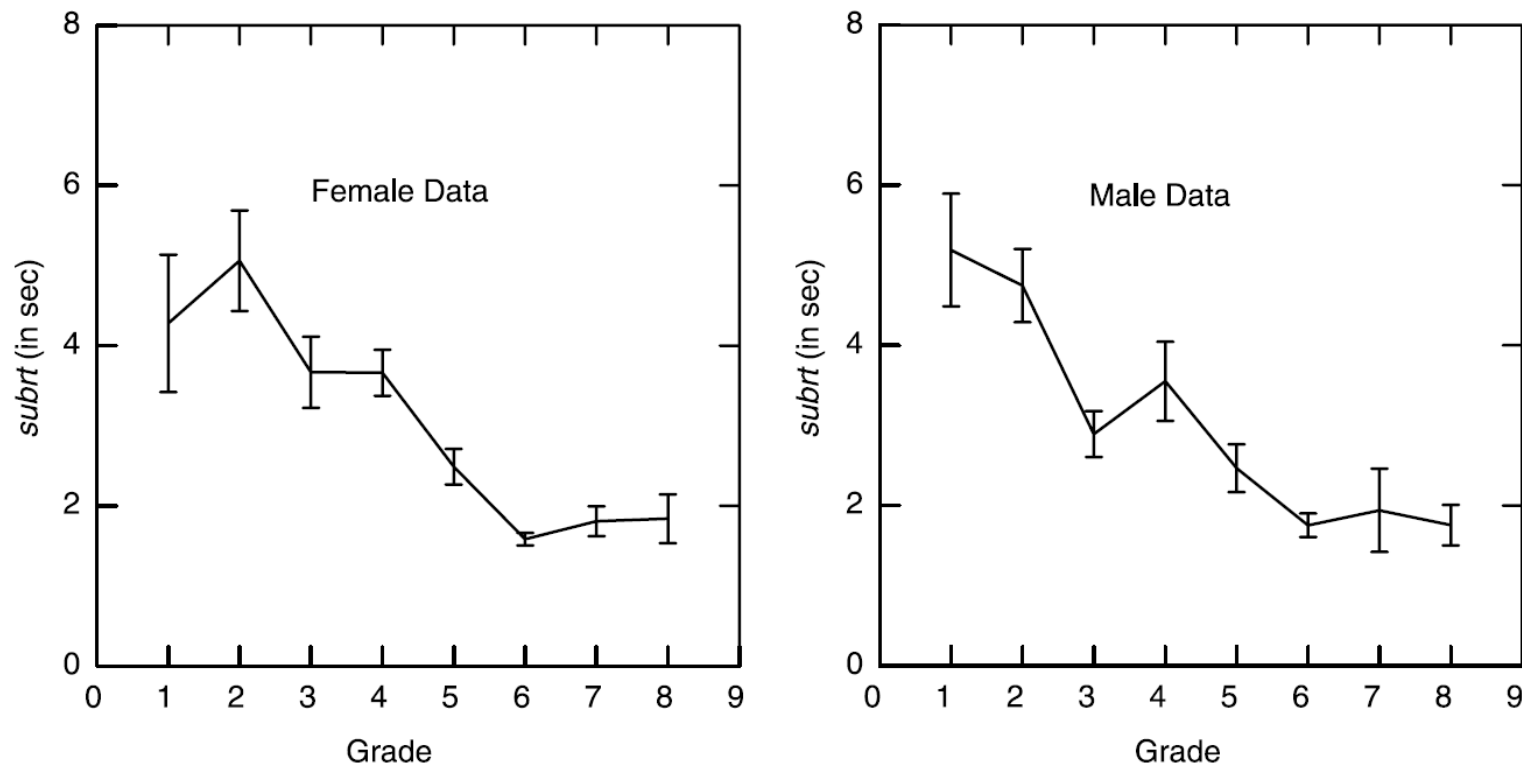


Fig. 2.7 Line graph of subtraction response times (*subrt*) as a function of grade.

Table 2.4 Data (Y) to be compared with the data of Table 2.1

	31	32	79	83	83	85	85	85	87	87
<i>Y</i>	87	89	89	89	89	89	89	90	90	91
	91	91	91	92	92	93	95	95		

Table 2.5 Comparison of statistics for the *Royer* data of Table 2.1 with those for the *Y* data of Table 2.4

		<i>Royer</i>		<i>Y</i>	
		Statistic	Std. error	Statistic	Std. error
Mean		84.61	2.89	84.61	2.92
95% Confidence interval for mean	Lower bound	78.68		78.62	
	Upper bound	90.54		90.59	
5% Trimmed mean		85.79		86.99	
Median		89.00		89.00	
Variance		234.025		238.099	
Std. deviation		15.298		15.530	
Minimum		47		31	
Maximum		100		95	
Range		53		64	
Interquartile range		17		6	
Skewness		-1.326	.441	-3.195	.441
Kurtosis		1.124	.858	9.664	.858

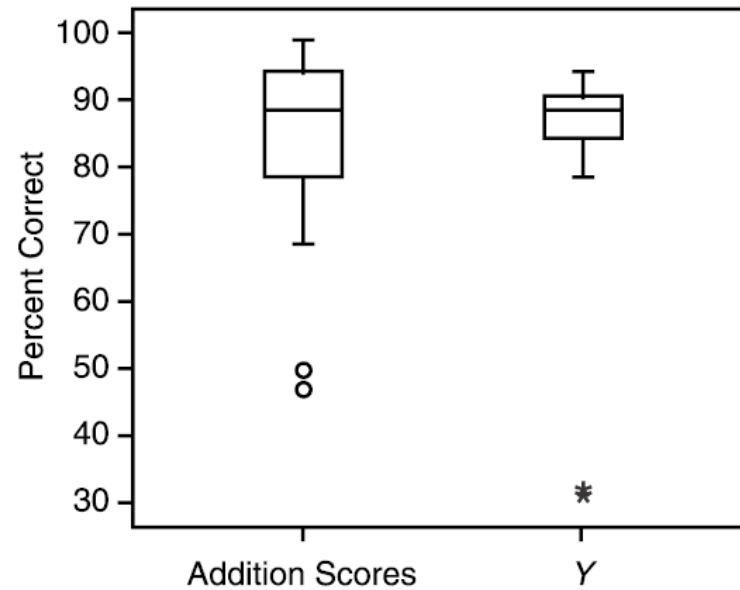


Fig. 2.8 Box plots of the data in Tables 2.1 and 2.4.

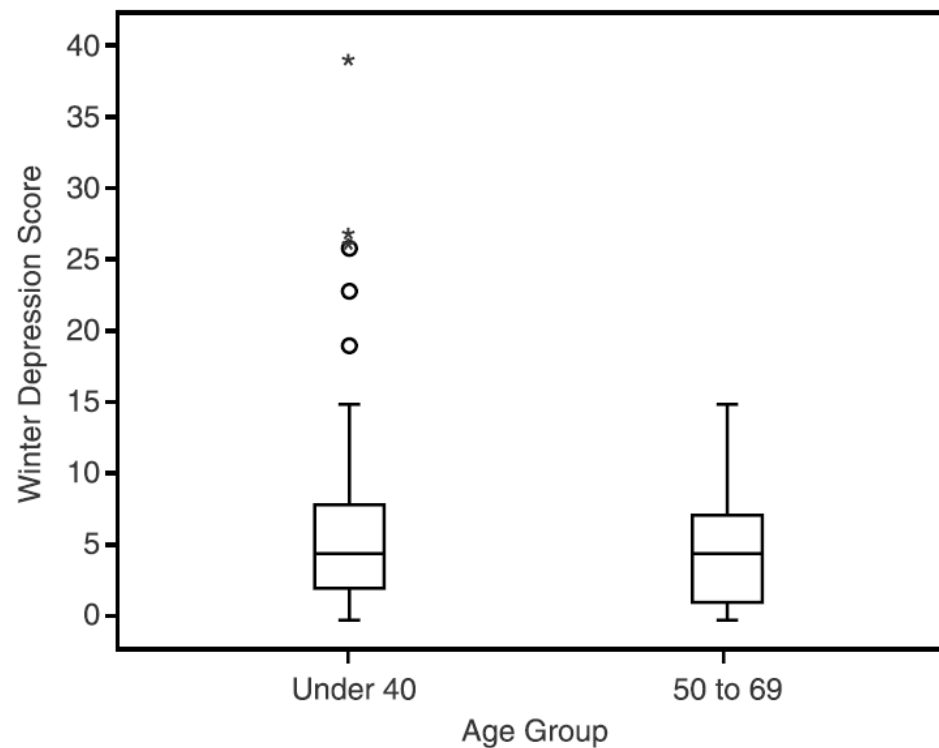


Fig. 2.9 Box plots of winter depression scores for two age groups of men.

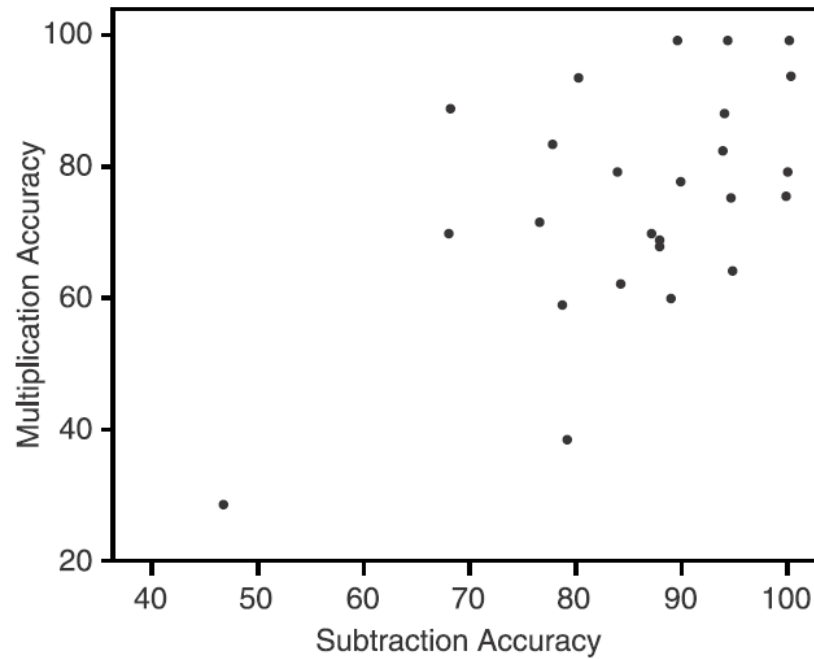


Fig. 2.10 Scatterplot of multiplication and subtraction accuracy for 28 third-grade children.

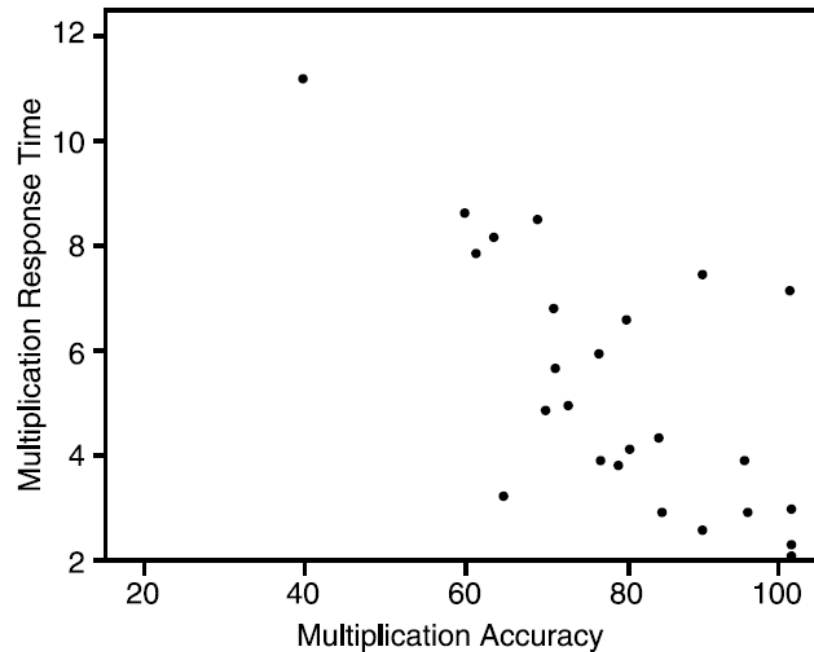


Fig. 2.11 Scatterplot of multiplication response time and accuracy for 28 third-grade children.