Relationships Between Variables

Overview

- Until now we have focused on statistics related to single variables
- Most research, however, explores the relationships between two or more variables
- This lecture will consider the different ways in which the relationships between multiple variables can be presented
- The best way to present your data will depend on the specific characteristics of your data

Related Statistical Techniques

Figure 8.1 Steps in showing relationships between two variables

Using Tables

- Two nominal variables: A cross-tab is usually appropriate; there may be a need to collapse categories if there are too many (e.g. gender and smoker/non-smoker)

- Two score variables: Tables can be used if you can break your data into bands (e.g. age groups and income bands)

- One score and one nominal variable: A table can be used – the mean and other descriptive statistics for the score variable are normally given (e.g. Experimental/Control group and test score)

Example of a cross-tab

Group	Test Score
Experimental	77%
Control	52%

Using Diagrams

- Two nominal variables: You can use either a compound or a stacked bar chart; there may be a need to collapse some categories

- Two score variables: You can use a scatter plot

- One nominal variable and one score variable: You can use a bar chart which displays the means of the score variables for each category

Example of a Compound Bar Chart

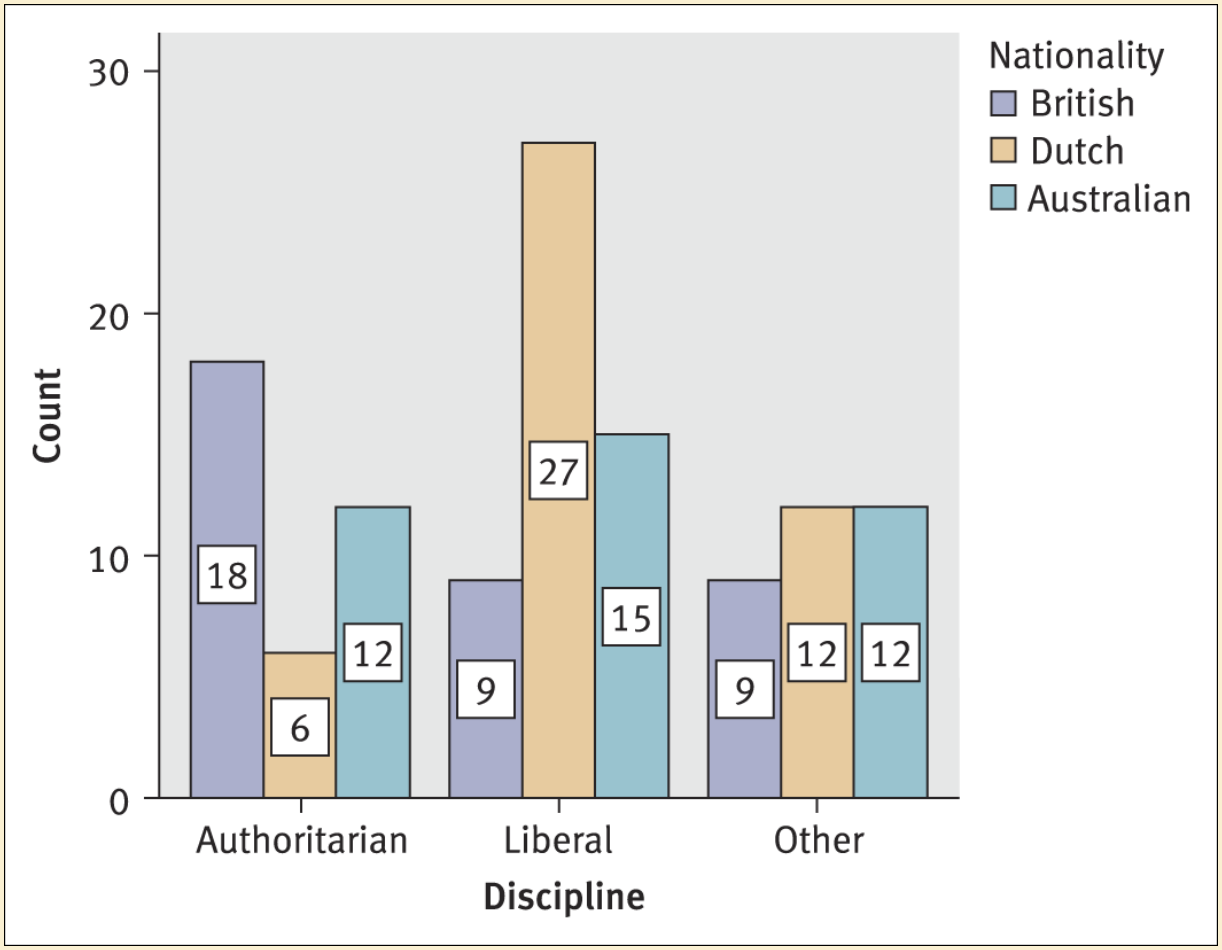

Figure 9.1 A compound bar chart

Example of a Stacked Bar Chart

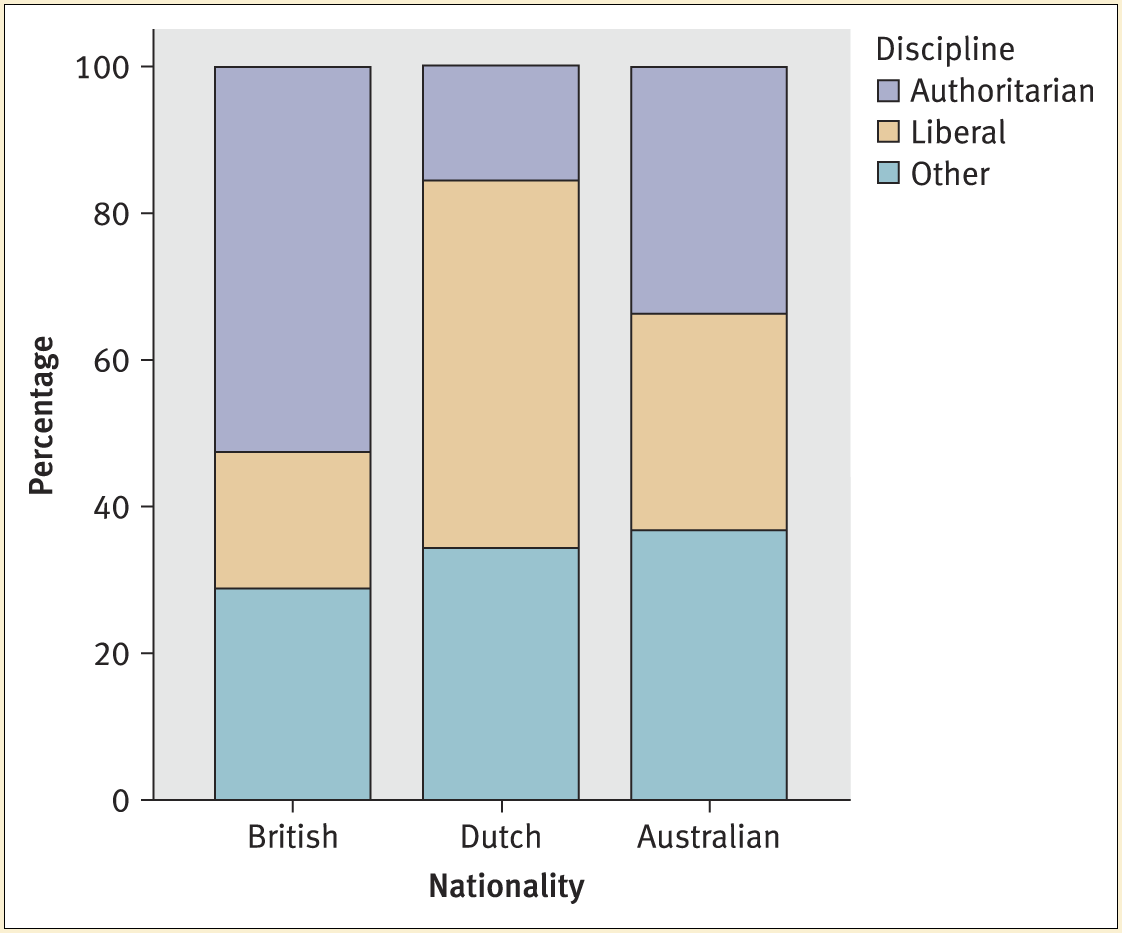

Figure 9.2 A stacked bar chart

Example of a Scatter Plot

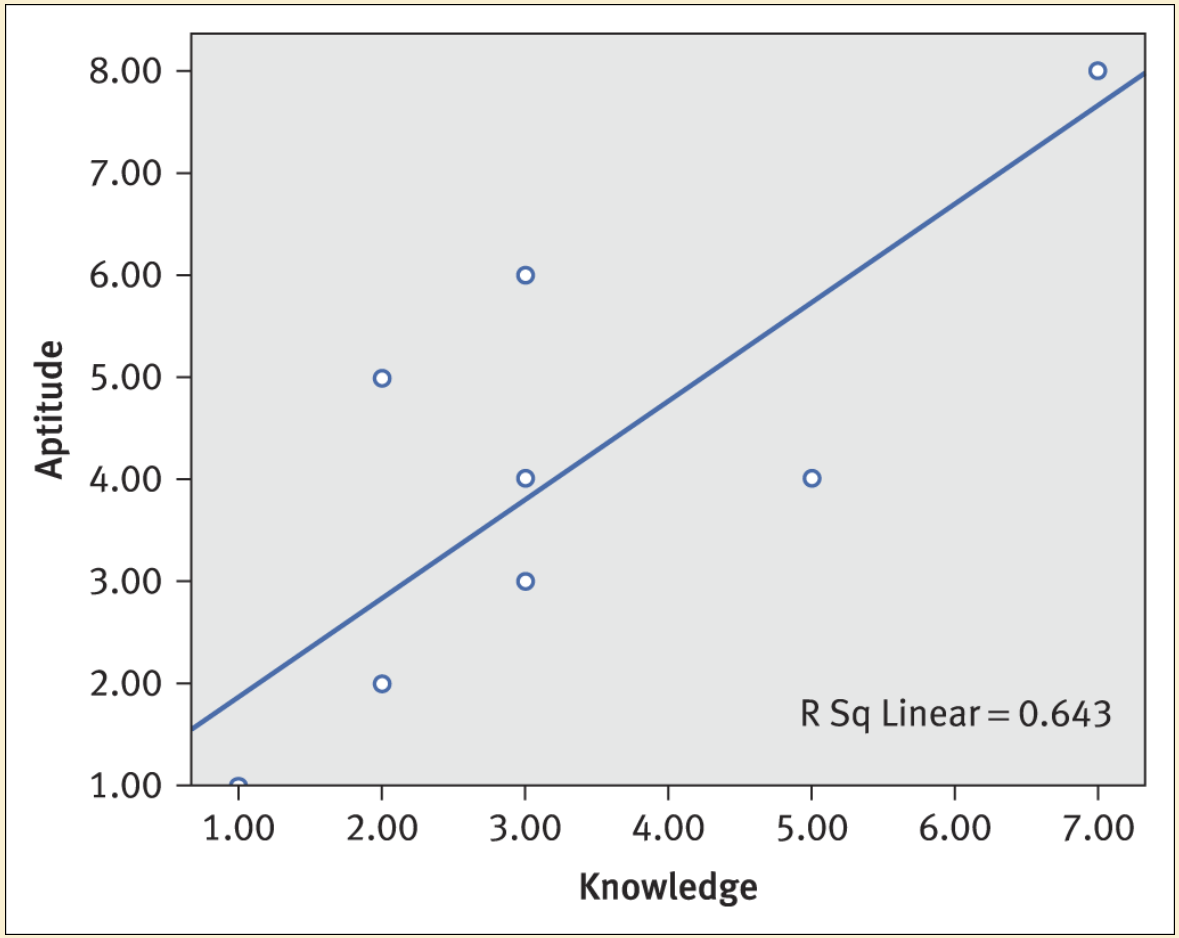

Figure 9.3 Example of a scatterplot

Example of a Bar Chart showing means

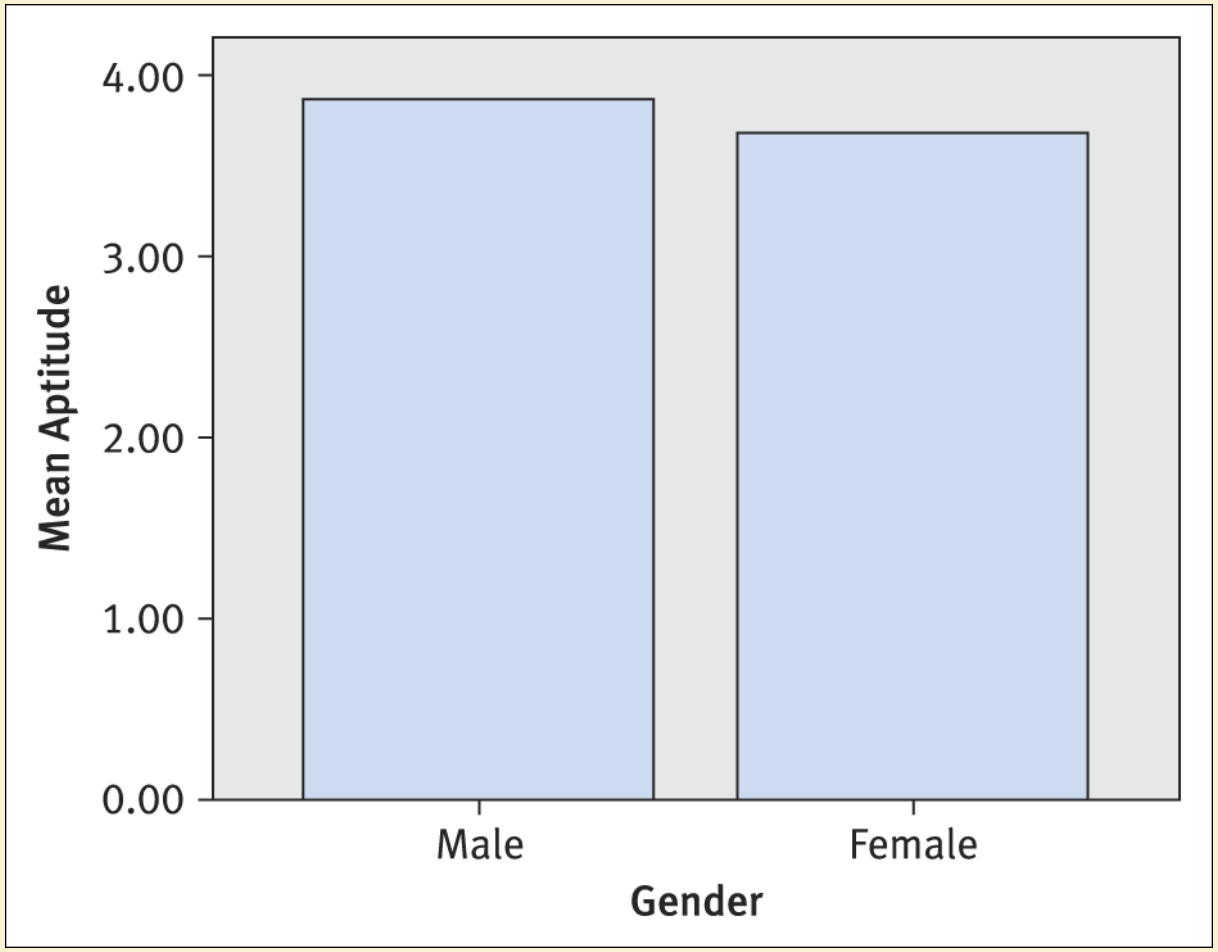

Figure 9.4 A bar chart representing means

Key Steps in using diagrams

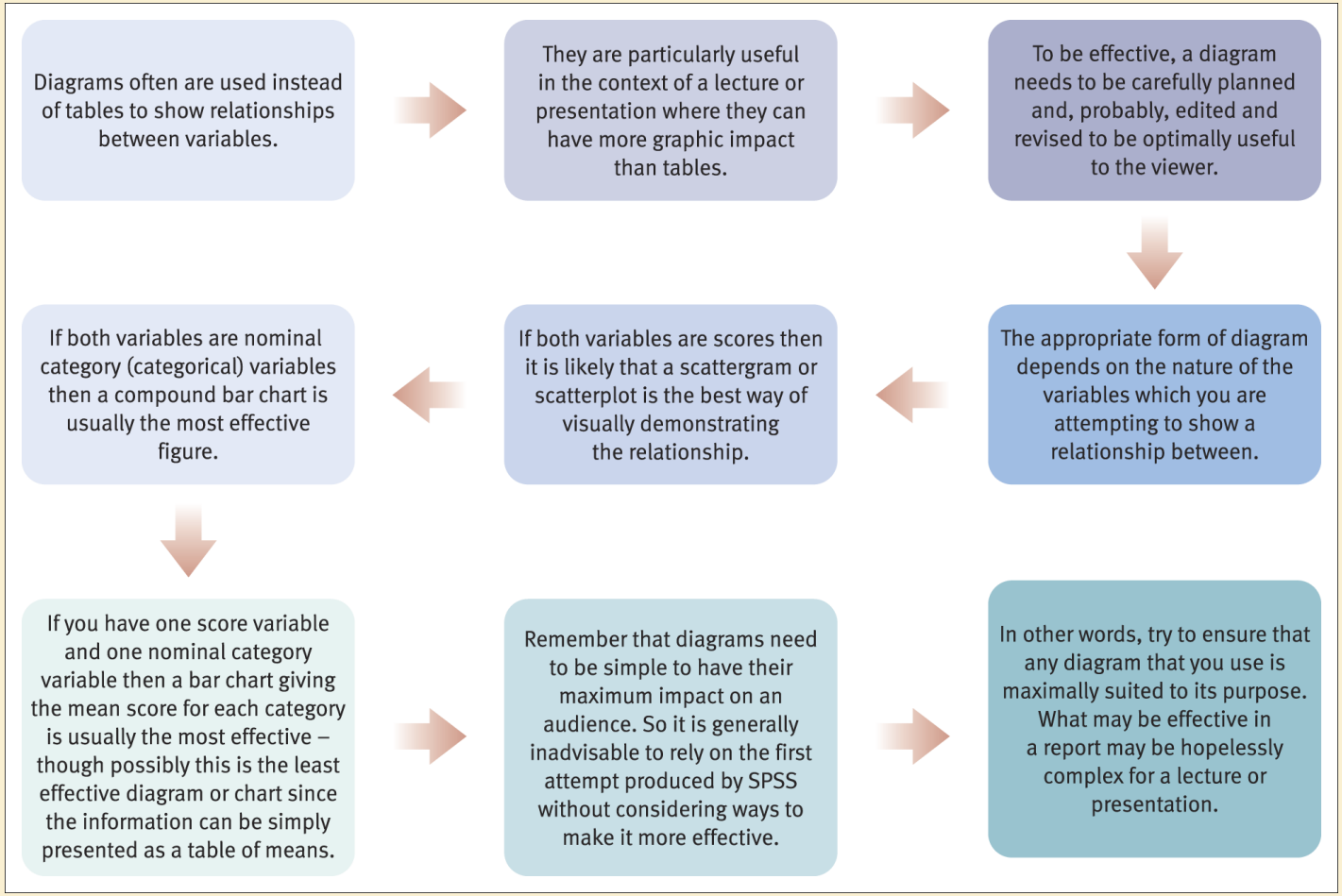

Figure 9.5 Steps in using diagrams to show relationships between variables

Conclusion

- There are a range of different ways in which the relationships between multiple variables can be illustrated using tables or diagrams
- The most appropriate method will depend on whether you are working with nominal or score variables
- It is important that the message is conveyed as simply and effectively as possible
- Be sure to clearly label all figures such that they can be quickly understood