

Procedure Used to Test for Significance

Whenever we perform a significance test, it involves comparing a test value that we have calculated to a critical value for the statistic.

For any statistic we are calculating (e.g., a 't' statistic, a chi-square statistic, a Mann-Whitney 'U'-statistic, a Spearman's Rank or Pearson's Product-moment Correlation Coefficient), the procedure is the same.

1. Decide on the probability level you will use - this is normally 5%.
2. Conduct the research.
3. Calculate the statistic.
4. Compare the statistic to a critical value obtained from a table.

If your statistic is higher than the critical value from the table (except for the Mann-Whitney 'U' test):

- Your finding is significant.
- You **reject the null hypothesis**.
- The **probability is small** that the difference or relationship happened by chance.

If your statistic is lower than the critical value from the table (except for the Mann-Whitney 'U' test):

- Your finding is **not significant**.
- You **fail to reject the null hypothesis** (it's mathematically incorrect to say that you 'accept the wrong hypothesis!').
- The **probability is high** that the difference or relationship happened by chance.

The Mann-Whitney 'U' test differs in that:

If your statistic is lower than the critical value from the table

- Your finding is significant.
- You **reject the null hypothesis**.
- The **probability is small** that the difference happened by chance.

If your statistic is higher than the critical value from the table

- Your finding is **not significant**.
- You **fail to reject the null hypothesis** (it's mathematically incorrect to say that you 'accept the wrong hypothesis!').

- The **probability is high** that the difference happened by chance