

## 10.1: Difference of Means

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Last chapter, we learned about mean differences, that is, the average value of difference scores. Those difference scores came from ONE group and TWO time points (or two perspectives). Now, we will deal with the difference of the means, that is, the average values of separate groups that are represented by separate descriptive statistics. This analysis involves TWO groups and ONE time point. As with all of our other tests as well, both of these analyses are concerned with a single variable.

It is very important to keep these two tests separate and understand the distinctions between them because they assess very different questions and require different approaches to the data. When in doubt, think about how the data were collected and where they came from. If they came from two time points with the same people (sometimes referred to as “longitudinal” data), you know you are working with repeated measures data (the measurement literally was repeated) and will use a repeated measures/dependent samples  $t$ -test. If it came from a single time point that used separate groups, you need to look at the nature of those groups and if they are related. Can individuals in one group being meaningfully matched up with one and only one individual from the other group? For example, are they a romantic couple? If so, we call those data matched and we use a matched pairs/dependent samples  $t$ -test. However, if there’s no logical or meaningful way to link individuals across groups, or if there is no overlap between the groups, then we say the groups are independent and use the independent samples  $t$ -test, the subject of this chapter.

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