2.6.1 Why do I need to use statistics?

There are numerous benefits to a statistical approach, but perhaps it is worth briefly outlining the perils of
p. 70 *not* using it. Let's say you have coded your data and ↳ have looked over the results, in a procedure akin to that described above. Now you are to examine the sorts of situations that receive a particular description and speculate on what feature of the stimulus may be calling for that form. The danger of relying only on intuition, here, is that people are notoriously prone to seeing correlations where there are none and missing them where they do exist (see Piattelli-Palmarini 1994 for an engaging illustration of all the ways we misjudge data). That is, you may be lured into thinking a feature of the stimulus is important when, in fact, it is not, or overlook something that is vital because you are not oriented towards it. This becomes all the more likely when you are dealing with multiple speaker data, or even multiple languages, and there is variation in precise extensional patterns. A statistical analysis can help in identifying which patterns are robust and reliable, and offer novel perspectives on your data.

There are multiple advantages of a statistical approach. Multivariate techniques can extrapolate more complex (multidimensional) solutions from your data, whereas working by hand will quite likely limit you to much simpler (and possibly only unidimensional) solutions. Most multivariate statistical tools also allow you to graphically represent your findings—a 'semantic map', as it were. These maps visually represent data in a manner that is much easier to absorb than reams of numbers. Finally, these techniques allow for quantification of how accurate a model is to the data, which means that we can assess our degree of confidence in any specific outcome.

2.7 Watch out! Pitfalls and dangers

A standardized stimulus set has numerous advantages. You do not need to wait for the phenomena of interest to turn up in spontaneous speech. You can efficiently map out the range of situations a term or construction applies to. And, in cross-linguistic (or cross-speaker) comparison, you can identify exceptional cases among common patterns for further exploration. However, there are potential pitfalls. The data obtained from a stimulus-based approach is only as good as the methods applied. It is crucial that you are clear and consistent in application of your procedures, coding, and most importantly in your reporting of your findings. This is essential for appropriate interpretation of your data.

More critically, the stimulus-based approach—like any other method of obtaining data—is not flawless. As discussed earlier, you have to be selective in the stimuli you use in any one sitting; the way you ask the question can lead to differences in responses; etc. But more egregious, perhaps, is the potential to overlook
p. 71 the emic perspective entirely. Even restricting ourselves to referential range, it is important ↳ to supplement the stimulus-based approach—like the one described here—with an examination of typical referents outside of the confines of the specific stimulus-set. Where else are these forms used? What are the typical foci? (See e.g. Conklin's 1955 classical study on colour.) It is important to explore how these forms are used *outside* the confines of the task to be able to interpret appropriately what they mean *within* the task. The stimulus-based approach does not replace corpus and verbal elicitation methods but supplements them and is supplemented by them. By combining methods, the limits of any one technique are overcome and converging evidence provides more confidence in findings (see e.g. Evans et al. forthcoming; Levinson and Wilkins 2006; Majid and Bowerman 2007; Majid and Levinson 2011).