

19.1: Prelude to Effect Size

Researchers often seek to learn more than whether the variable under investigation has an effect and/or the direction of the effect. This is particularly true for research that has practical applications. For example, an investigation of the efficacy of a pain-relief drug would seek to determine the extent of the relief and not merely whether there was any relief. Similarly, a study of a test-preparation course's efficacy would seek to determine how much the course raises students' test scores. Finally, a study of the relationship between exercise and blood pressure would seek to determine how much blood pressure decreases for a given amount of exercise. In all of these examples, a significance test would not be sufficient since it would only provide the researcher with information about the existence and direction of the effect. It would not provide any information about the size of the effect.

Before we proceed with a discussion of how to measure effect size, it is important to consider that for some research it is the presence or absence of an effect rather than its size that is important. A controversial example is provided by Bem (2011) who investigated precognition. Bem found statistically significant evidence that subjects' responses are affected by future events. That is, he rejected the null hypothesis that there is no effect. The important question is not the size of the effect but, rather, whether it exists at all. It would be truly remarkable if future events affect present responses even a little. It is important to note that subsequent research (Ritchie, Wiseman, & French, 2012) has failed to replicate Bem's results and the likelihood that the precognition effects he described are real is very low.

Bem, D. J. (201). Feeling the future: Experimental evidence for anomalous retroactive influences on cognition and affect. *Journal of Personality and Social Psychology*, 100, 407–425.

Ritchie, S. J., Wiseman R., and French, C. C. (2012) Failing the Future: Three Unsuccessful Attempts to Replicate Bem's 'Retroactive Facilitation of Recall' Effect. *PLoS ONE* 7.

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