

## 1.10: The role of variables — predictors and outcomes

Okay, I've got one last piece of terminology that I need to explain to you before moving away from variables. Normally, when we do some research we end up with lots of different variables. Then, when we analyse our data we usually try to explain some of the variables in terms of some of the other variables. It's important to keep the two roles “thing doing the explaining” and “thing being explained” distinct. So let's be clear about this now. Firstly, we might as well get used to the idea of using mathematical symbols to describe variables, since it's going to happen over and over again. Let's denote the “to be explained” variable  $Y$ , and denote the variables “doing the explaining” as  $X_1$ ,  $X_2$ , etc.

Now, when we doing an analysis, we have different names for  $X$  and  $Y$ , since they play different roles in the analysis. The classical names for these roles are **independent variable** (IV) and **dependent variable** (DV). The IV is the variable that you use to do the explaining (i.e.,  $X$ ) and the DV is the variable being explained (i.e.,  $Y$ ). The logic behind these names goes like this: if there really is a relationship between  $X$  and  $Y$  then we can say that  $Y$  depends on  $X$ , and if we have designed our study “properly” then  $X$  isn't dependent on anything else. However, I personally find those names horrible: they're hard to remember and they're highly misleading, because (a) the IV is never actually “independent of everything else” and (b) if there's no relationship, then the DV doesn't actually depend on the IV. And in fact, because I'm not the only person who thinks that IV and DV are just awful names, there are a number of alternatives that I find more appealing.

For example, in an experiment the IV refers to the **manipulation**, and the DV refers to the **measurement**. So, we could use **manipulated variable** (independent variable) and **measured variable** (dependent variable).

The terminology used to distinguish between different roles that a variable can play when analysing a data set.

role of the variable	classical name	modern name
“to be explained”	dependent variable (DV)	Measurement
“to do the explaining”	independent variable (IV)	Manipulation

We could also use **predictors** and **outcomes**. The idea here is that what you're trying to do is use  $X$  (the predictors) to make guesses about  $Y$  (the outcomes). This is summarized in the table:

The terminology used to distinguish between different roles that a variable can play when analysing a data set.

role of the variable	classical name	modern name
“to be explained”	dependent variable (DV)	outcome
“to do the explaining”	independent variable (IV)	predictor

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