

1.4.1: IV and DV- Variables as Predictors and Outcomes

Okay, we've got more terminology before moving away from variables. All variables can be defined by their Scale of Measurement. Variables in research can also be described by whether the experimenter thinks that they are the cause of a behavior (IV), or the effect (DV). The IV is the variable that you use to do the explaining and the DV is the variable being explained. 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.

Definition: Independent Variable (IV)

The variable that the researcher thinks is the cause of the effect (the DV). The IV is sometimes also called a "predictor" or "predicting variable".

A true IV is created by the experimenter, but sometimes we measure something that we think is the cause and call it an "IV." If we just measure the groups, then we can't be sure that the IV is causing the DV, so it's better to create the groups through random assignment. IVs are often qualitative/nominal; for most of this textbook, the IV levels are the groups that we are comparing.

Note

Look up "independent variable" online. What is that definition? How is it similar or different from the one provided? Which makes more sense to you?

In the Scientific Method example (Table 1.4.1.2), the IV levels were students who re-organized their notes, and students who only re-read their notes.

Definition: Dependent Variable (DV)

The variable that you think is the effect (the thing that the IV changes). The DV is the outcome variable, the thing that you want to improve.

DVs are always measured. DVs can be qualitative, but for most of this textbook the DV will be quantitative because we will be comparing means.

Note

Look up "dependent variable" online. What is that definition? How is it similar or different from the one provided? Which makes more sense to you?

The logic behind these names goes like this: if there really is a relationship between the variables that we're looking at, then we can say that DV *depends on* the IV. If we have designed our study well, then the IV isn't dependent on anything else.

Practice

Although the terms IV and DV are misleading, they are still the standard phrasing so that's what we'll work with in the following examples. In the Scientific Method example, the DV was the points earned on the first paper. The DV is what we want to improve, and the IV is a group that we think will do better on the DV plus at least one comparison group (sometimes called a control group).

Exercise 1.4.1.1

1. SAT score & type of high school (public vs. private)
 1. Q: Which variable is the IV? (groups or levels)?
 2. Q: Which variable is the DV?
2. Salary & type of job obtained
 1. Q: Which variable is the IV? (groups or levels)?
 2. Q: Which variable is the DV?
3. Fail rate & brand of computer

1. Q: Which variable is the IV? (groups or levels)?
2. Q: Which variable is the DV?
4. Exam score & method of course delivery (online vs. hybrid vs. face-to-face)
 1. Q: Which variable is the IV? (groups or levels)?
 2. Q: Which variable is the DV?
5. Type of phone and how long the battery lasts
 1. Q: Which variable is the IV? (groups or levels)?
 2. Q: Which variable is the DV?

Answer

1. SAT score & type of high school (public vs. private)
 1. Q: Which variable is the IV? (groups or levels)? type of high school
 2. Q: Which variable is the DV? SAT score
2. Salary & type of job obtained
 1. Q: Which variable is the IV? (groups or levels)? type of job obtained
 2. Q: Which variable is the DV? Salary
3. Fail rate & brand of computer
 1. Q: Which variable is the IV? (groups or levels)? brand of computer
 2. Q: Which variable is the DV? Fail rate
4. Exam score & method of course delivery (online vs. hybrid vs. face-to-face)
 1. Q: Which variable is the IV? (groups or levels)? course delivery
 2. Q: Which variable is the DV? Exam score
5. Type of phone and how long the battery lasts
 1. Q: Which variable is the IV? (groups or levels)? type of phone
 2. Q: Which variable is the DV? how long the battery lasts

This page titled [1.4.1: IV and DV- Variables as Predictors and Outcomes](#) is shared under a [CC BY-SA 4.0](#) license and was authored, remixed, and/or curated by [Michelle Oja](#).