

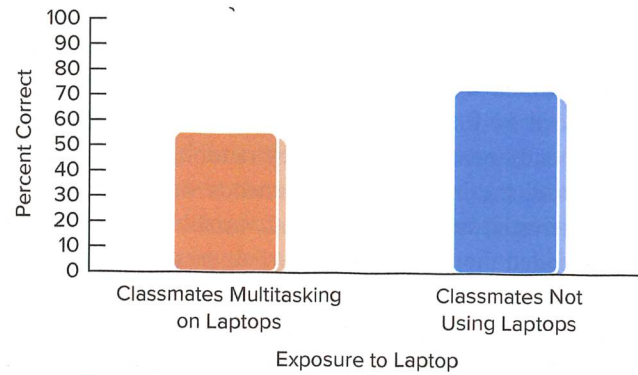


FIGURE 4.5
Results of an experiment

Based on Sana, F., Weston, T., & Cepeda, N. J. (2013). Laptop multitasking hinders classroom learning for both users and nearby peers. *Computers & Education*, 62, 24–31, Figure 3.

Other researchers may focus on a specific dependent variable and study how various independent variables affect that one behaviour. Consider some possible experiments examining the relationship between group size and decision-making. One researcher studying this issue might focus on group size, varying the size of groups and looking at its effect on a wide variety of different behaviours (e.g., jury decisions, riskiness of group decisions). Another researcher might just be interested one kind of decision-making, such as jury decisions. In this case, the researcher could study how a wide range of different factors influence jury decisions (e.g., jury size, judge's instructions). Both approaches lead to important knowledge. Figure 4.6 presents an opportunity to test your knowledge of the types of variables we have described.

DESIGNING EXPERIMENTS THAT ALLOW FOR CAUSAL INFERENCES

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In the experimental method, the independent variable is manipulated and the dependent variable is then measured. Experiments allow for causal inferences in part because they incorporate temporal precedence. In many non-experimental designs, both variables are measured at the same time, so we don't have any information about what comes first. In an experiment, we manipulate the independent variable, and then we measure its effect on our dependent variable, so we have this temporal information.

Another aspect of experiments that helps to support causal inferences is the attempt to eliminate the influence of all other variables except for the one that is being manipulated

Researchers conducted a study to examine the effect of music on exam scores. They hypothesized that scores would be higher when students listened to soft music compared to no music during the exam because the soft music would reduce students' test anxiety. One hundred (50 male, 50 female) students were randomly assigned to either the soft-music or no-music conditions. Students in the soft-music condition listened to music using headphones during the exam. Fifteen minutes after the exam began, researchers asked students to complete a questionnaire that measured test anxiety. Later, when the exams were completed and graded, the scores were recorded. As hypothesized, test anxiety was significantly lower and exam scores were significantly higher in the soft-music condition compared to the no-music condition.

Review the lists below and link each study variable to the type of variable it represents by drawing a line connecting the two.

Study variable	Type of variable
Sex of participant	Independent variable
Exam score	Participant variable
Headphones	Dependent variable
Music condition	Mediating variable
Test anxiety	Confounding variable

FIGURE 4.6
 TEST YOUR-SELF! Types of variables