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Research Methods

Assignment One

* 1. This study attempts to institute a within-subjects design without the use of a control group. There is no way for researchers to know that the drop in the participants’ blood pressure levels was due to the medication provided. There was a statistically significant decrease in blood pressure compared to *what*? This is an incomplete study and these results would never be published. In order to fix this study there would need to be a control group.
  2. This study suffers from differential Attrition. The final split between number of participants in control and experimental groups is too large to convey accurate results. These groups are no longer similar enough to each other.
  3. This study is incredibly informal, and does not have a control group. Growing children very often gain strength just by virtue of their natural physical maturation. This study needs a control group that does not participate in the athletic program. Additionally, there are likely external environmental confounds at play as well. Researchers do not know whether or not these students are also participating in sports/exercise related activities outside of this program. In order for this experiment to be a success, experimenters would need to limit the children’s physical activity to this athletic program, so that they know that the results are due *only* to the program, and to no other confounding variable.

1. 1. In the Lanzetta and Englis experiment “the cofactors displays of pleasure and distress were paired equally often with reward, shock, and no outcome for observers”. If the coactor’s displays had always corresponded with the participant’s experiences, experimenters would not be able to tell whether participants’ reactions were to their own results or the coactor’s results. Lanzetta and Englis controlled for the confound of participants’ own outcomes by randomizing (using random assignment) the correlation between the two
   2. Lanzetta and Englis also randomized the gender of the cofactor that the participant was matched with. The possible confound of gender is important because of participants’ possible different reactions to distress/happiness presented by each gender. The use of random assignment controlled for this confound.
2. 1. Lanzetta and Englis clearly presented to participants the likelihood that they and their partner would cooperate/compete. This was meant to provide a competitive/cooperative tint to their experience. However, cooperation/competition is rarely so straightforward. For example, in work situations people are often meant to cooperate with on another. However, they are also all working towards an individual goal—for example, a raise or a promotion. This isn’t necessarily something experimenters could or should control for—the straightforward nature of the cooperation/competition label was created exactly for the purposes of the experiment. However, caution should still be taken when attempting to generalize these results to other situations.
   2. College undergraduates have been proven to be a pool of participants not fully representative of the rest of the world. These students exist in a highly competitive environment, which would likely influence their overall actions in a situation such as the one presented in the study. To control for this Lanzetta and Englis should have taken subjects from outside of the university community as well.
3. There would be 4! (24) different possible orders for the four conditions. The best choice of orders for controlling for order effects would be partial counterbalancing. The four different orders of conditions are created using a latin square and then each participant is randomly assigned to one of the four conditions. This means that any difference due to order will be averaged out through all of the different trials with different orders. Using the latin square, the four different orders would be, Order A: 4, 8, 16, 32 Order B: 32, 4, 8, 16 Order C: 16, 32, 4, 8 Order D: 8, 16, 32, 4. This is the best method to ensure that every possible sequence of treatments is represented.
4. In experimentation, it is impossible to make a definitive conclusion. In this experimenter’s case she should have presented the results as “fail to reject the hypothesis that concrete and abstract words are equally accessible”. This experiment also presents a possible ceiling effect issue—in both cases participants are highly proficient in remembering the words and cannot get any better or worse. This reduces the ability to interpret this data fully.
   1. The independent variables are valence words and facial manipulation. The two levels of valence words are positive or negative valence words. The two levels of facial manipulation are the pencil held in the teeth and lips to stop smiling and it in the lips only as a control. It is a within subjects (repeated measures) design for the positive/negative valence word and facial manipulation. These results are compared within and between subjects.
   2. The study hypothesized that blocking facial feedback for participants would decrease their response and comprehension to emotional language. The dependent variable of the N400 at the valence word didn’t vary with facial manipulation but at the final word it did. The dependent variable of facial movement was affected by the positive or negative word (in the control group, positive sentences lead to increased smiling).
   3. Experimenters controlled for order effects related to facial manipulation group with counterbalancing. They randomized whether participants were placed in the control or experimental group first.
5. Yes this is an argument. The premises are that “for a research study to have internal validity there must be one, and only one, explanation for the research results” and “ If a study includes a confounding variable then there is an alternative explanation” while the conclusion is “the key to achieving internal validity is to ensure that no extraneous variables are allowed to become a confounding variable”. This is a deductive argument because all the conclusion does is make explicit the information found in the premises.
6. Yes this is an argument. The premises are, “compared to baseline, words related to happiness elicited increased muscle activity at sites typically recruited during smiling” and “words related to anger and disgust elicited increased frowning activity”. The conclusion is “emotional language activates somatic processes involved in emotional experience”. This is an inductive argument. The conclusion goes beyond (amplifies) what the premises state and does not simply make explicit the information found in the premises. Additionally, the truth of the premises does *not* guarantee the truth of the conclusion.