

Look at causal comparative research psychology essay



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Causal-comparative research design can be defined as a research that permits researchers to study naturally occurring, cause and effect relationship through comparison of data from participant groups who exhibit the variables of interest. Causal-comparative research can also be referred to as ex post facto, Latin for “ after the fact” (Sowell, 2001). In other words, causal-comparative research can be studied in retrospect since it attempts to determine reasons or causes for the existing condition between or among groups of individuals. This research design is often found in the fields of education, medicine and social sciences.

According to Sullivan (2001), “ The belief that there is order in the universe, that there are reasons why everything happens, and that scientists, using the procedures of science, can discover what those reasons are” explains that researchers usually go on to examine the reasons why the observed pattern exist and what they suggest. For this reason, the basic element of causal-comparative approach involves starting with an effect and seeking for possible causes or vice versa. The basic approach, which involves starting with effects and investigating causes, is sometimes referred to as retrospective causal-comparative research. Retrospective causal-comparative studies are much more common in educational research. Meanwhile, the variation which starts with causes and investigates effects is called prospective causal-comparative research.

The cause and effect relationships may influence how a problem is formulated and a research design developed. It can be said that the major purpose of causal-comparative research is to investigate potential cause-and-effect relationships that occur naturally without manipulation of

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variables. In this particular research design, researchers try to find the reasons why certain forms of behaviour occur. To formulate this research design it requires at least two variables namely independent and dependent variable to support the objective of the research. In this approach, it can be said that some independent variable (IV) is the factor, or one of several factors, that produces variation in a dependent variable (DV) (Sullivan, 2001). Consider, for instance a researcher formed 3 groups of preschoolers consist of those who never watched Sesame Street, those who watched it sometimes, and those who watched it frequently. The 3 groups were then tested by making comparison on a reading readiness test. Based on the mentioned case study, it shows that the independent variable affect the dependent variable. In this case, Sesame Street is the independent variable (IV) while the preschoolers' reading performance is the dependent variable (DV).

The Characteristics of Causal-comparative Research

According to Babbie (2013), there are three main characteristics for causal-comparative. Firstly, to infer the existence of a cause and effect relationship, the causal-comparative research must demonstrate an association between the independent and dependent variable. Therefore, it involves two or more groups and one independent variable. In addition, it determines the cause or consequences of differences that already exists between or among groups of individuals. The groups are assigned to the treatments and the study is carried out. The individuals are not randomly assigned to treatment groups because they were already selected into groups before the research began.

In this research, it can be said that cause and effect depends on each other, whereby the cause may precedes the effect or vice versa. It is important to note that the independent variables in causal-comparative cannot be manipulated, should not be manipulated, or simply not manipulated but could be manipulated because the independent variable has already occurred. Thus, it is not possible to manipulate the independent variable.

Causal-comparative research requires the study to be non-spurious. In this context, non-spurious refers to a causal relationship between two variables. According to Babbie (2013), spurious relationship is a coincidental statistical correlation between two variables, shown to be caused by some third variable. However, in causal-comparative research, only two variables are required and not caused by the action of some third variable, therefore it is shown that causal-comparative research is non-spurious.

There are two types of causes that contribute to this research design, namely necessary and sufficient causes. Generally, the term 'cause' is assumed to mean something that produce an effect, result, or consequence. A necessary cause represents a condition that must be present for the effect to follow. For example, it is necessary for you to attend driving classes in order to get a driving license. However, by only attending driving classes is not a sufficient cause of getting a license. This is because it is required to pass the driving test to get the driving license.

On the other hand, a sufficient cause represents a condition that, if it is present, guarantees the effect in question (Babbie, 2013). This is not to say that a sufficient cause is the only possible cause of a particular effect. Take

the case of the driving test mentioned earlier; not attending the test would be a sufficient cause for failing it, though students could fail it in other ways as well. Thus, a cause can be sufficient, but not necessary.

Design and Procedure

The selection of the comparison groups is very important in causal-comparative procedure. Although the independent variable is not manipulated, there are control procedures that can be exercised to improve the interpretation of results. The researcher selects two groups of participants, the experimental and control groups, but more accurately referred to as comparison groups. These two groups may differ in two ways; whether one group possesses a characteristic that the other does not or each group has the characteristic, but they differ in terms of degrees and amounts. The independent variable differentiating the groups must be clearly and operationally defined, since each group represents a different population. In designing this research, the random sample is selected from two already existing populations, and not from a single population.

A causal-comparative design is chosen, for example, when researchers want to study the possible influences of Montessori school enrolment on children's mathematical ability. Researchers locate a population in which several levels of mathematical ability are known to exist and then select a sample of participants. The researchers collect data from all participants on measures of mathematical ability and school enrolment. Once they have collected their data, researchers decide how many levels of mathematical ability they wish to study. In this case, suppose the researchers want two groups. They could

classify the participants' scores accordingly from highest to lowest, and then locate the middle score of the list. All those participants whose measures are above the middle score are designated as “ high mathematical ability” and those below it, “ low mathematical ability”.

Next, the researchers compare task performance scores in each group to see whether Montessori school enrolment appears to influence task performance. There are three possibilities that could emerge from the study.

Montessori school children have higher scores than non-Montessori school children.

Montessori school children have lower scores than non-Montessori school children.

No discernible pattern shows in the scores of Montessori and non-Montessori school children.

This shows that each statement suggests a possible relationship between the two variables which are Montessori school enrolment and the children's mathematical ability.

Measurement of second variable

Group B

Group A

Measurement of first variable determines group placements of participants

Participant selection

Generalized example

Montessori school children

Participant selection

Measurement of mathematical ability

Measurement of Montessori school enrolment

Non-Montessori school children

Example of school enrolment and mathematical ability

FIGURE 1: Procedures in causal-comparative designs.

3. 1 Control Procedures

In other study design, random assignment of participants to groups is probably the best way to try to ensure equality of groups, but random assignment is not possible in causal comparative studies because the groups are naturally formed before the start of the study. There is a possibility to have extraneous variable in a causal comparative research that may affect the overall purpose of the study. Thus, control techniques are used to compare the sample groups equally. There are three common control techniques that can be used, namely matching, comparing homogenous groups or subgroups and analysis of covariance.

Matching can be defined as a technique for equating groups on one or more variables. If researchers identify a variable likely to influence performance on the dependent variable, they may control for that variable by pair-wise matching of participants. In other words, for each participant in one group, the researcher finds a participant in the other group with the same or very similar score on the control variable. If a participant in other group does not have a suitable match, the participant is eliminated from the study. Thus, the resulting match groups are identical or very similar with respect to the identified extraneous variable.

Another way to control extraneous variable is to compare groups that are homogenous with respect to the extraneous variable. The more similar the two groups are on such variables, the more homogenous they are on everything but the variable of interest. This homogeneity makes a stronger study and reduces the number of possible alternative, explanations of the research findings. Not surprisingly, then, a number of control procedures correct for identified inequalities on such variables. This approach also permits the researcher to determine whether the target grouping variable affects the dependent variable differently at different levels of control variable. That is, the researcher can examine whether the effect on the dependent variable is different for each subgroup.

Analysis of covariance is a statistical technique used to adjust initial group differences on variables used in causal comparative and experimental studies. In essence, analysis of covariance adjusts scores on a dependent variable for initial differences on some other variable related to performance on the dependent variable. Analysis of covariance statistically adjusts the

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scores of the group to remove the initial advantage so that at the end of the study, the results can be fairly compared, as if the two groups started equally.

4. Data Analysis and Interpretation

Analysis of data in causal-comparative research involves a variety of descriptive and inferential statistics. The most commonly used descriptive statistics are mean and standard deviation. Mean indicates the average performance of a group on some measure of a variable. Standard deviation is a measure of the dispersion of a set of data from its mean. The more spread apart the data, the higher the deviation. Standard deviation is calculated as the square root of variance.

The most commonly used inferential statistics are t tests, analysis of variance (ANOVA) and chi square. T tests are used to determine whether the means of two groups are statistically different from one another. ANOVA is used to determine if there is significant difference among the means of three or more groups. Babbie (2013) defined chi square as a frequently used test of significance in social science. In other words chi square tests are used to determine whether there is an association between two or more categories. Chi square test explains that observed frequencies of the items or events in categories are compared with expected frequencies.

Similarities and Differences between Related Research Designs

Causal-comparative versus Correlational Research

It is better to know that the major purpose of correlational research is to determine the magnitude and direction of associations or relationships among variables. Even with different purpose, correlational research is sometimes confused with causal-comparative since both lack manipulation of variables and requires caution in interpreting results. In addition, both researches seek to explore relationships among variables, and when relationships are identified, both research designs are often studied at a later time by means of experimental research.

However, causal-comparative and correlational research still can be differentiated. Compared to correlational research, causal-comparative compare two or more groups of subjects, whereas correlational research only focus on one group. In addition, correlational research has no attempts to understand cause and effect whereas; causal-comparative studies' purpose is to identify the cause and effect relationships between the variables. Apart from that, correlational research involves two or more variables and one group while causal-comparative involves two or more groups and one independent variable.

Causal-comparative versus Experimental Design

Causal-comparative can also be confused with experimental research both attempt to establish cause-effect relationships between variables and both involve group comparisons. In addition, both causal-comparative and experimental research can test hypotheses concerning the relationship between an independent variable and a dependent variable.

The difference between the two researches is that in causal-comparative, the individuals are already in groups before study begins, whereas in experimental design, individuals are randomly assigned to treatment or control groups. Moreover, the random sample studies for causal-comparative is selected from two already-existing populations, while in experimental research, the random sample is selected from only one population. The researcher in experimental research manipulates the independent variable; that is, the researcher determines who is going to get what treatment. In contrast, in causal-comparative research, individuals are not randomly assigned to treatment groups because they are in established groups before the research begins. The example for the established group can be male or female, college graduates or non-graduates. In causal-comparative research the groups are already formed and already differ in terms of the key variable in question. In other words, the independent variable in experimental research can be manipulated by the researcher to determine the research's effect, whereas the independent variable in causal-comparative cannot be manipulated since the independent variable has already occurred.

Advantages of Causal-Comparative Research

Like other research designs, causal-comparative research has its strength and weaknesses. One of the strengths is that the causes are being studied after they presumably have applied their effect on another variable. The researchers might administer a questionnaire to study the causes or they can also do interviews and observation to find the cause or effect related to their research. For example, a researcher may hypothesize that participant in preschool education is the major factor contributing to differences in the <https://assignbuster.com/look-at-causal-comparative-research-psychology-essay/>

social adjustment of first graders. To examine this hypothesis, the researcher would select a sample of first graders who had participated in pre-school education and a sample of first graders who had not and would then compare the social adjustment of the two groups. If the children who participated in pre-school education exhibited the higher level of social adjustment, the researcher's hypothesis would be supported. Thus, the basic causal-comparative approach involve starting with an effect (i. e., social adjustment) and seeking possible causes (i. e., did pre-school affect it).

Another advantage of causal-comparative research method is that it allows us to study cause-and-effect relationships under conditions where experimental manipulation is difficult or impossible. Unlike experimental research, the variable in causal comparative research is not manipulated because it has already occurred. For example, a researcher might be interested in determining the effect of poor parenting on the issue of juvenile delinquency. Clearly it would not be ethical to approach the parents and ask about how they raise their children because it is too personal to discuss family issues to an outsider. Thus, causal comparative research permits investigation on a number of variables that cannot be studied experimentally.

In addition, causal-comparative studies help to identify variables worthy of experimental investigation. In fact, causal comparative studies are conducted solely to identify the probable outcome of an experimental study. In other words, many relationships can be studied in a single research study. Suppose for example, a researcher were considering implementing computer assisted language learning in the school system. Before implementing the <https://assignbuster.com/look-at-causal-comparative-research-psychology-essay/>

mentioned program, the researcher might consider trying it out on an experimental basis for a year in a number of schools or classrooms.

However, even such limited adoption would require costly new equipment and teacher training. Thus, as a preliminary measure, to inform the decision, the researcher could conduct a causal comparative study to compare the English language achievement of students in school who are currently using the instruction with the English language achievement who are not using it. If the results indicated that the students learning through computer assisted language learning instruction were achieving higher scores, the researcher would probably decide to go ahead with an experimental tryout of computer assisted language learning instruction. If no differences were found, the researcher would probably not go ahead with the experimental tryout to save time, cost and effort.

Disadvantages of Causal-Comparative Research

Despite its many advantages, causal comparative research has some serious limitations to be caution of. In causal comparative research, the researcher has limited control over the study and extreme caution must be applied in interpreting results. This is because the groups are already formed at the beginning of the study. An apparent cause-effect relation may not be as it appears. The alleged cause of an observed effect may in fact be the effect itself, or, a third variable may have caused both the apparent cause and the effect. In other words, an observed relationship between variable A and B can mean that A causes B, B causes B, or a third variable C causes both A and B.

A

causes

C

causes

B

A

B

causes

B

B

causes

Figure 2: Relationships of variables

For example, suppose a researcher hypothesized that enrolment to preschool is a determinant of reading achievement. The researcher would compare the achievement of two groups, one comprising individuals with children who went to preschool and children who did not go to preschool. If those who went to preschool performed better on reading measures, the researcher could be tempted to conclude that going to preschool influences reading achievement. However, this conclusion would be groundless.

Because the participants arrived at the beginning of the study with an established group of children who went to preschool and children who did not, and an established level of reading achievement, it is not possible to determine which came first and which influence the other. Moreover, it is very plausible that some third variable, such as parental attitude, is the main influence on both reading achievement and pre-schooling. For example, parents who sent their children to preschool and encourage their children may have children who have higher reading achievement.

Analysis of Studies Using Causal-comparative Research Design

“ One of the major findings within the field of Second Language Acquisition (SLA) research is the different rates of success with which children and adults achieve nativelike proficiency in a second language (L2)”.(.) It is also common in SLA studies that mostly L2 learners do not attain nativelike proficiency because of their first language maintenance. In a research report entitled “ Does first language maintenance hamper nativelikeness in a second language?” by Bylund, Abrahamsson and Hyltensam of Stockholm University, they aim to address the role of L1 proficiency in L2 attainment. In this study, the researchers hypothesized that the second language learners do not attain nativelike proficiency because of their first language maintenance. It is recognized that the independent variable in this research is the first language maintenance, whereas, the dependent variable is the nativelikeness in a second language. It shows that there is clearly an association between the two variables since the independent variable (IV), which is the first language maintenance might probably affect the dependent variable, which is the second language.

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To examine the hypothesis, the researchers select a sample population consists of Spanish-speaking immigrant community in Sweden, where residents of Chilean origin are in the community. 30 L1 Spanish-and L2 Swedish residents participated in the study where they acquire their second language before the age of twelve. The bilinguals came from countries throughout Latin America with a specific concentration in Chile. The participants were either university students or degree-holder. A common denominator of the participants was that they exhibited a generally high level of L2 proficiency. For the second group, fifteen native speakers of Spanish and fifteen native speakers of Swedish were recruited as monolingual controls. The researchers choose small sample populations to represent the study populations. The control groups were matched to the bilingual participants by educational level. In the process of matching the variables and groups, it can be said that pure monolingualism was not a criterion for participation, and the majority of the participants had foreign language skills such as English language. In addition, none of the control participants had lived abroad for any significant length of time in a setting in which their foreign language skills could be practiced. These two groups will be referred to as Spanish-speaking control and Swedish-speaking controls participants.

Bilingual participants were tested individually in each language on two different occasions. The bilinguals and the Swedish-speaking controls were tested in the same setting and instructors and the Spanish-speaking controls were tested in another setting with another instructor. The language proficiency of the participants were investigated by piloting a grammaticality

judgment test (GJT) to find out about the sample's grammatical intuition. Furthermore, in order to measure the participants' semantic and grammatical inferencing skills, a cloze test was piloted to all participants.