

REPLICATIONS OF RESEARCH AND IT'S SCIENTIFIC BACKGROUND

Jaysing M. Hotkar, Ph. D.

BPCA's College of Physical Education, Wadala, Mumbai-31.

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Abstract

Replication is the principle of Research. Replication means a repetition of the basic research. This article focused on replications of experimental research and its scientific background. In all experimental research study, some variation exists because the research units, such as samples, time, geographic condition, weather condition, psychological factors, primary and secondary information, extraneous variables interactive and reactive factors, which cannot be physically identical, therefore its influence cannot be controlled during the experiment.

Replication in physical education is also important, to collect evidence for the application of a particular program (X). However, the principle of replication is ignored by the physical educators. Focus on new problems, Non-Professional Researchers, Research for only Degree etc., may be the reasons for non-replication in physical education.

The replication studies conducted compare the original results of the basic experiment as well as attempts to validate the findings of a prior piece of research. Replications help to determine the influence of across Time, Area, Condition, Sampling and Method factor. More trials of replication provide more results and its average will be close to the expected value. More time tested any program is always better and eligible to generalize. Hence, based on 'Law of Inertia of Large Number', replications of the basic experiment are always helpful to increase validity of the result of basic experiment.

Keywords: Replication, Generalization of Results, Original Results

Replication is the principle of Research. Replication means a repetition of the basic research. This article focused on replications of experimental research and its scientific background. In all experimental research study, some variation exists because the research units, such as samples, time, geographic condition, weather condition, psychological factors, primary and secondary information, extraneous variables interactive and reactive factors, which cannot be physically identical, therefore its influence cannot be controlled during the experiment.

When experiments are replicated and achieve the same or similar results as the original study, it gives greater validity to the findings. If a researcher can replicate a study's results, it means that it is more likely that those results can be generalized to the larger population (Kendra Cherry, 2019).

Replication in physical education is also important, to collect evidences for the application of a particular program (X). However, the principle of replication is ignored by the physical educators. Focus on new problems, Non-Professional Researchers, Research for only Degree etc., are may be the reasons for non-replication in physical education.

Experimental research studies are based on cause and effect relationship theory. Justification of the theory is not possible on the basis of the results of a single experiment. The results of the experiments conducted in various places may be differ to each other. These variations are expected and removable by using a number of repetitions of the basic experimental studies. Repeated studies in large numbers of basic population, independent and dependent variables are useful to generalize the results, as well as to control concomitant, intervening and extraneous variables. Replications are helpful in obtaining an accurate estimate of the experimental error and gives more precise results and obtaining a more precise estimate of the mean treatment effect. The scientific explanation of the replication studies as under.

To compare the original results with the replicated

In probability theory, the '*Law of inertia of Large Number*' is a theorem that describes the result of performing the same experiment in a large number of times. According to the law, the average of the results obtained from a large number of trials should be close to the expected value or values of average, and will tend to become closer as more trials are performed (Law-of-inertia-of-large-numbers, 2018).

To study the influence of Time factor

According to '*Cause and Effect relationship theory*, deferent time and seasons in an experiment create a causal relationship, in such condition the researcher cannot be able to determine the effect occurred by Program, Time or Season. Hence replication studies in various Time and Season helps to determine the influence of the program across time or season.

To study the influence of Area and Condition factor: Due to the area factor, some of the characteristics of the population may be naturally differ. If an experiment conducted in New *Copyright@2023 Scholarly Research Journal for Humanity Science & English Language*

Mumbai, the obtained results cannot be generalized in Kashmir or rest of other places because samples, time, geographic condition, weather condition, psychological factors, primary, secondary information and other various factors differ to each other, as well as the researcher cannot be controlled the interference of concomitant, intervening and extraneous variables which create experimental error. This experimental error cannot be judge and rectified, 'therefore, the replications of the basic experiment is needed. However, Recently, the science of psychology has come under criticism because a number of research findings do not replicate (Edward Diener, 2019).

To study the influence of Sampling factor

As per 'Central Limit Theorem' (Stattrek, 2016) large sample size increases normality and as per 'Law of Statistical regularity' (Businessdictionary.com, 2016) randomization technique help to choose desirability sample. Large sampling represent all the characteristics of the population whereas randomization technique provide an equal chance to the population to become a part of the experiment and it makes more likely the probability of the selection of samples (Statistics How To , 2019). Large Sample is always useful to generalize the results, but unfortunately it creates its own error. However, it is essential to generalize the results for the population in large. A single study conducted by using a large sample size is not enough because, the Method, Program (X) and its influence on dependent variable may be differed across time and across situations, by considering the factors, replications are necessary by using large sample size to collect the strong evidences of the influence of the program, hence, replications of the basic experiment to generalize it at large population is important.

To test the Method factor

Various methods should be used to conduct replication of the basic research to study the methodological influence across program, to investigate the results were a false, negative or correct.

CONCLUSION

The replication studies conducted to compare the original results of the basic experiment as well as it attempts to validate the findings of a prior piece of research. Replications help to determine the influence of across Time, Area, Condition, Sampling and Method factor. More trials of replication provide more results and its average will be close to the expected value. More time tested any program is always better and eligible to generalize. Hence, on the basis of *'Law of Inertia of Large Number'*, replications of the basic experiment are always helpful to increase validity of the result of basic experiment.

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