# Essay on the role of research and statistics in the field of psychology

Science, Statistics

The term research can be defined broadly as the process that involves any data, facts and information gathering with an aim of advancing knowledge. Scientifically, research is defined as the act of doing a methodical study with an aim of proving a hypothesis of answering a given question. The central role in carrying out research is to look for a definitive answer to a situation. Research process is usually systematic and follows a standardized protocol and a set of steps (Shuttleworth, 2008).

Scientific method refers to the process through which scientists endeavor to collectively and over a long time come up with an accurate representation of the world. The outcome is always intended to be reliable, consistent and one that is non-arbitrary. The use of the scientific method aims at using standardized procedures and criteria that minimize the influence of personal and cultural beliefs in the development of a theory. The scientific method is comprised of four steps. The initial step is the observation as well as the description of a single phenomenon or a number of phenomena. The second step involves the formulation of the hypothesis that can explain the phenomena and this may be in the form of a mathematical relation or causal mechanism like in physics. The third step is the use of the formulated hypothesis in the prediction of other phenomena that are in existence or the prediction of the results for a new observation quantitatively. The fourth step involves the performing the experimental tests by several experimenters working independently carrying out experiments that are properly performed (Wolfs, 2005).

In case the experiments end up supporting the hypothesis, the hypothesis my finally be regarded as theory or a law of nature. However, if the

experiments end up not supporting the hypothesis, the hypothesis is either rejected or modified (Wolfs, 2005).

Primary data refer to the data that are collected through primary research. Primary research is usually carried out after some insights have been gained into the issue of interest by reviewing some secondary data or through the analysis of primary data that had been collected previously. Primary data is usually collected from sources that are original and such as first-hand account of how an event took place or art or literature work that has had not been interrupted. There are various sources of primary data such as diaries, interviews, questionnaires, experimental or direct observations, stories, drama, poetry visual art and sheet music. There are various advantages that are associated with primary data sources. These include the fact that the researcher is able to put the focus on qualitative issues, as well as quantitative ones. Primary data also addresses specific issues of research by controlling the research design to fit the needs (University of Georgia, 2003).

However, primary data is very expensive to collect when compared to the secondary data and requires proper planning and execution of research plans. This results in the primary data taking more time to collect than the secondary data. Some of the research projects although may offer valuable information they are far beyond the reach of the researcher.

Secondary data is on the other hand, collected from existing data with an aim of using it for a different purpose that the one for which the data was originally collected. Some sources of secondary data include books, journal articles as well as textbooks (University of Georgia, 2003). Collection of

secondary data is less expensive and takes a shorter time to collect than the primary data collection. Secondary data has no good focus on the specific issues that the researcher needs (George, 2012). Translating the results obtained from secondary data may result in the interpretation being skewed since the data was collected for a different purpose.

Statistic plays an essential role in research. Statistics enable the researcher to derive a meaning from the information that has been collected in an experiment. It is through statistics that the data collected is correctly interpreted. Statistics also enable proper organization of data especially when the information being handled is enormous. The data is presented in a way that is easy to comprehend through the use of pie charts, graphs, frequency distributions, scatter plots among others (Cherry, 2013).

Statistics also provide ways through which data is described in a more understandable way. This is through the use of descriptive statistics such as means, mode, and median. Statistics also enable making inferences from the data collected possible. Researchers use inferential statistics that are already known and are able to infer things concerning the collected data. Statistics also enable testing of hypothesis using the data collected or give a prediction about the future happenings using the current data. The inferential statistics thus enable for the determination of the chances that a given hypothesis should be either rejected or accepted (Cherry, 2013). Through statistics, it is also possible to determine whether the research process is an accurate and a worthwhile process.

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