

Experimental Method : Advantages and limitations

Degree Course (Three Years)

Psychology Honours

B. A. Part– I Honours Paper I: General Psychology

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Experimental method is considered to be the most scientific and objective method for studying behavior. It is observation under controlled conditions. In this method the investigator tries to study the cause and effect relationships regarding human behavior by performing experiments. There are three types of variables. Independent variable, dependent variable and intervening or controlled variable.

Advantages of Experimental Research?

1. It provides researchers with a high level of control.

By being able to isolate specific variables, it becomes possible to determine if a potential outcome is viable. Each variable can be controlled on its own or in different combinations to study what possible outcomes are available for a product, theory, or idea as well. This provides a tremendous advantage in an ability to find accurate results.

2. There is no limit to the subject matter or industry involved.

Experimental research is not limited to a specific industry or type of idea. It can be used in a wide variety of situations. Teachers might use experimental research to determine if a new method of teaching or a new curriculum is better than an older system. Pharmaceutical companies use experimental research to determine the viability of a new product.

3. Experimental research provides conclusions that are specific.

Because experimental research provides such a high level of control, it can produce results that are specific and relevant with consistency. It is possible to determine success or failure, making it possible to understand the validity of a product, theory, or idea in a much shorter amount of time compared to other verification methods. You know the outcome of the research because you bring the variable to its conclusion.

4. The results of experimental research can be duplicated.

Experimental research is straightforward, basic form of research that allows for its duplication when the same variables are controlled by others. This helps to promote the validity of a concept for products, ideas, and theories. This allows anyone to be able to check and verify

published results, which often allows for better results to be achieved, because the exact steps can produce the exact results.

5. Natural settings can be replicated with faster speeds.

When conducting research within a laboratory environment, it becomes possible to replicate conditions that could take a long time so that the variables can be tested appropriately. This allows researchers to have a greater control of the extraneous variables which may exist as well, limiting the unpredictability of nature as each variable is being carefully studied.

6. Experimental research allows cause and effect to be determined.

The manipulation of variables allows for researchers to be able to look at various cause-and-effect relationships that a product, theory, or idea can produce. It is a process which allows researchers to dig deeper into what is possible, showing how the various variable relationships can provide specific benefits. In return, a greater understanding of the specifics within the research can be understood, even if an understanding of why that relationship is present isn't presented to the researcher.

7. It can be combined with other research methods.

This allows experimental research to be able to provide the scientific rigor that may be needed for the results to stand on their own. It provides the possibility of determining what may be best for a specific demographic or population while also offering a better transference than anecdotal research can typically provide.

Limitations of Experimental Research?

1. Results are highly subjective due to the possibility of human error.

Because experimental research requires specific levels of variable control, it is at a high risk of experiencing human error at some point during the research. Any error, whether it is systemic or random, can reveal information about the other variables and that would eliminate the validity of the experiment and research being conducted.

2. Experimental research can create situations that are not realistic.

The variables of a product, theory, or idea are under such tight controls that the data being produced can be corrupted or inaccurate, but still seem like it is authentic. This can work in two negative ways for the researcher. First, the variables can be controlled in such a way that it skews the data toward a favorable or desired result. Secondly, the data can be corrupted to seem like it is positive, but because the real-life environment is so different from the controlled environment, the positive results could never be achieved outside of the experimental research.

3. It is a time-consuming process.

For it to be done properly, experimental research must isolate each variable and conduct testing on it. Then combinations of variables must also be considered. This process can be lengthy and

require a large amount of financial and personnel resources. Those costs may never be offset by consumer sales if the product or idea never makes it to market. If what is being tested is a theory, it can lead to a false sense of validity that may change how others approach their own research.

4. There may be ethical or practical problems with variable control.

It might seem like a good idea to test new pharmaceuticals on animals before humans to see if they will work, but what happens if the animal dies because of the experimental research? Or what about human trials that fail and cause injury or death? Experimental research might be effective, but sometimes the approach has ethical or practical complications that cannot be ignored. Sometimes there are variables that cannot be manipulated as it should be so that results can be obtained.

5. Experimental research does not provide an actual explanation.

Experimental research is an opportunity to answer a Yes or No question. It will either show you that it will work or it will not work as intended. One could argue that partial results could be achieved, but that would still fit into the “No” category because the desired results were not fully achieved. The answer is nice to have, but there is no explanation as to how you got to that answer. Experimental research is unable to answer the question of “Why” when looking at outcomes.

6. Extraneous variables cannot always be controlled.

Although laboratory settings can control extraneous variables, natural environments provide certain challenges. Some studies need to be completed in a natural setting to be accurate. It may not always be possible to control the extraneous variables because of the unpredictability of Mother Nature. Even if the variables are controlled, the outcome may ensure internal validity, but do so at the expense of external validity. Either way, applying the results to the general population can be quite challenging in either scenario.

7. Participants can be influenced by their current situation.

Human error isn't just confined to the researchers. Participants in an experimental research study can also be influenced by extraneous variables. There could be something in the environment, such as an allergy, that creates a distraction. In a conversation with a researcher, there may be a physical attraction that changes the responses of the participant. Even internal triggers, such as a fear of enclosed spaces, could influence the results that are obtained. It is also very common for participants to “go along” with what they think a researcher wants to see instead of providing an honest response.

8. Manipulating variables isn't necessarily an objective standpoint.

For research to be effective, it must be objective. Being able to manipulate variables reduces that objectivity. Although there are benefits to observing the consequences of such manipulation, those benefits may not provide realistic results that can be used in the future. Taking a sample is reflective of that sample and the results may not translate over to the general population.

9. Human responses in experimental research can be difficult to measure.

There are many pressures that can be placed on people, from political to personal, and everything in-between. Different life experiences can cause people to react to the same situation in different ways. Not only does this mean that groups may not be comparable in experimental research, but it also makes it difficult to measure the human responses that are obtained or observed.

The advantages and disadvantages of experimental research show that it is a useful system to use, but it must be tightly controlled in order to be beneficial. It produces results that can be replicated, but it can also be easily influenced by internal or external influences that may alter the outcomes being achieved. By taking these key points into account, it will become possible to see if this research process is appropriate for your next product, theory, or idea.