Positivism in Twin Studies

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Introduction

The influence of positivism as a philosophy of science in modern times had resulted in the scientific researcher and the scientific method being treated as infallible in search for scientific truth. Problems arise when adopting positivism as a philosophy of science since these problems translate to all sciences. In an effort for psychology to be treated along the same lines as the natural sciences, Tolman (1992) argues that psychology implicitly adopts a positivistic view on knowledge. While the shortcomings of positivism are evident in all disciplines, they are especially evident in psychology. While various methods of psychology could be used to illustrate the problems of positivism, this paper focuses on the Twin Method.

Positivism: Classical and Logical

Positivism can be defined as a philosophical system that holds that every rationally justifiable assertion can be scientifically verified and/or is capable of logical or mathematical proof. Positivism rejects metaphysics and theism because they can not be empirically verified. There are two types of positivism: Classical Positivism and Logical positivism. The term 'Classical Positivism' was coined by August Comte in 1830-1842 in his work *The Course of Positive Philosophy* (Comte & Martineau, 1853).Comte could be credited as one of the first to attempt a philosophy of science as the first three volumes of *Course on Positive Philosophy* focused on natural (physical) sciences already in existence (physics, chemistry, biology), and the latter two emphasized the inevitable emergence of social sciences. Classical positivism involves a move from defining science in terms of theological knowledge and/or abstract metaphysical concepts to defining science in terms of empirical (positive) knowledge. To Comte, empirical knowledge is anything that can be directly observed through scientific investigation, and interpreted through reason and logic. Comte viewed the latter forms of knowledge

-Theological and Metaphysical knowledge- as lesser but necessary modes of knowledge (Giddens, 1974). According to Comte's Law of three stages, society passes through three stages of ascertaining truth- theological knowledge and then metaphysical knowledge with positive scientific knowledge being the endpoint. Comte believed that psychology "can only consist of physiological study of the brain and of a social and historical study of the products of the human," in turn disregarding introspection because there are "no facts of the inner sense." While Comte's philosophy of science was not perfect, it did influence others. Ernst Mach was one such philosopher influenced by Comte's philosophy of science and later expanded on it. Ernst's new philosophy of science came to be known as Logical Positivism (also known as logical empiricism or neopositivism). Logical Positivism shares many similarities with Classical positivism in that both philosophies are based on directly observable empirical phenomenon to which reason and Logic is applied. However, Logical Positivism embraced the concept of verification through scientific methodology. Logical positivism influences all major sciences to this day.

Twin Method

The twin method is a psychological research method used to determine the genetic component of a behaviour by studying twins. The Twin Method comes from the field of Behavioural Genetics, a sub-discipline of psychology (and biology) that looks at the genetic influences on psychology. Although Francis Galton (the father of behavioural genetics) was the first to perform twin investigations, the twin method was created by German dermatologist Hermann Werner Siemens. The Twin method studies twins and correlates their genetic similarity with the expression of a trait, behaviour or disorder. Identical twins (monozygotic twins) who share 100% genetic similarity are compared to Fraternal twins (dizygotic twins) who on average share 50% genetic similarity; any behavioural differences between monozygotic and dizygotic twins are attributed to genetic factors. To account for environmental effects, twin studies are performed on twins (monozygotic and dizygotic) that are reared apart and compared to those that live together. The key variable studied in Twin Studies is heritability, which is an estimation of the degree

of variation of a phenotypic trait in a population that is due to genetic variation between individuals in that population (Joseph, 2004). The goal of Twin studies in psychology is to answer the nature versus nurture debate in relation to specific traits psychological. Twin studies, being a method that originates from positivistic field of behavioural genetics, is also inherently positivistic. Twin studies looks at many sets of twins and focuses solely on genetic relatedness, immediate environment and expression of trait of those twins and ignores many other factors. As a result, the shortcomings of positivism are evident in this research method.

Problems of the Positivistic Researcher

The first major problem of positivism is the question of the researcher. Positivism puts forth the notion that as long as knowledge is based on empirical observations, the question of *who* conducts the research and their intentions for performing said research are not important. However, does the question who conducts the research matter? Some would argue yes, the identity and the goals of the research does in fact matter. Consider the history of the Twin Method. Twin research was first attempted by Francis Galton who also the father of the Eugenics movement. Galton's intent behind the eugenics movement was to produce a "highly gifted" race by having genetically superior people (or who Galton considered to be genetically superior) selectively marry other genetically superior people. The twin method was created by Hermann Werner Siemens who was also a major figure in racial hygienic movement in the 1920's. Siemens was a Nazi and supported the Nazi's racial policies believe them to be his "utopian dreams" translated into state policy (Joseph, 2004).

The next problem is of what researchers choose to study and why. Positivism does not account for researcher bias or their intentions which ultimately affect research results produced and interpretation of those results. The psychologist's intentions are reflected in what they choose to study; while in most cases that intent of psychological research is usually knowledge or prestige sometimes, those intentions are in fact malicious. In psychological research, researchers have been shown to hide their socio-political agenda under the guise of empirically founded research such as the famous study

"The Bell Curve" (Gould, 1996). This socio-political agenda is often evident in the content of the research. Twin Studies often look at the genetic component of Intelligence (specifically IQ), Criminology and Mental disorders (Barnes et al, 2014; Joseph, 2004; Teo and Ball, 2009). The implications of this research are that innate genetic influences in people cause them to be smarter, more criminally inclined and less mentally healthy than others while ignoring other factors such as culture and socio-economic status etc. These genetic influences are also used to retroactively justify why certain people have power in society and why others are disadvantaged (Gould, 1981, Teo and Ball 2007). Does the identity or motivation of the researcher really matter if empirical observations are objective? Well the problem is that these observations are not truly empirical and even if they were, it would not matter. In his work *Theory and Experiment in Psychology: A study critical of its foundations* Holzkamp looks the relationship between experimental practices and theoretical conceptualizations. Holzkamp demonstrated that despite what the results of the study shows, the conclusion derived could be anything. Holzkamp believed the subjective nature of interpretations was due to a lack of a guidelines on how to interpret and draw conclusions from experimental results. In other words, no matter what the results demonstrate, a psychologist with a socio-political agenda (such as creating a superior race) will interpret results in a manner that allows them to further their goals.

Problems with the Positivist Methodology

With positivism comes the belief of Methodologism (also known as methodological imperative) which is the practice of treating the method as the most important aspect of research (Gao, 2014). Mostly found in natural-scientific psychology, methodologism favors experimental and statistical methods over theoretical, social, and cultural approaches, ignores theoretical assumptions underlying research and deemphasizes the subject matter and practical relevance of psychological research. Questions of method such as "what experimental design was used" or "what statistical dictate the validity of what is studied" directs research. Methodologism is maintained through institutional means as specific institutions (such as the

American Psychological Association) define which methods are deemed acceptable. Methodologism goes hand-in hand with positivism since positivism stipulates all knowledge gained through scientific knowledge must be objective knowledge. The definition of objectivity shifts from "knowledge devoid of subjective bias" to "in accordance with established scientific methods." A major problem with methodologism occurs when accepted scientific methodology is later shown to be inadequate or faulty. This is extremely evident with Twin Studies. The twin method is considered a key method of behavioural genetics despite its methodological flaws. Twin Studies were viewed as a *de facto* method for establishing a genetic link in behaviour. However, in recent years it has been demonstrated that some of the central assumptions of the twin method are limited (Joseph, 2004). One such methodological flaw is the "equal environment assumption." The equal environment assumption assumes that both monozygotic and dizygotic twins are equally correlated for their exposure of environmental influences when studying a specific trait. This allows for variations in the trait to be attributed to genetic factors (Kendler et al, 1993.). It is widely accepted now that this assumption is not true because monozygotic twins experience more similar environments than dizygotic twins (Joseph, 2004). The failing of the equal environment assumption brings in to question all knowledge previously generated through the twin method and highlights the fact that methodology can in fact be flawed and lead to false knowledge.

Another problem with the positivistic method is the search for objectivity. This paper is not arguing the whether or not an objective truth or reality exists but focuses on how science frames objectivity. In positivism, objective knowledge is seen as valuable while subjective knowledge is seen as a hindrance. Historical psychologists Murphy and Kovach (1972) define objectivity as "avoiding all assumptions about consciousness and turning to the explicit description of the relations between stimulating situations and the responses to them" (Hollway, 2014). In other words, to be objective is to have the complete removal of subjectivity from the scientific method. The other side of the coin, Subjectivity, is defined by Bordo (1987) as "influences proceeding from 'within' the human being – not supplied

by the world outside the perceiver – which are capable of affecting how the world is perceived," which results in "false inner projections on the outer world of things." When a person's subjectivity influences their understanding of any phenomenon to any capacity, that is considered a subjective interpretation. The problem occurs when the search for an objective scientific truth leads to subjective interpretations being regarded as "objective scientific truth." However, there is a problem with these subjective interpretations of data. First, it leads to personal opinions and beliefs implicitly and explicitly affecting scientific knowledge produced. Once these beliefs are entrenched as "scientific knowledge" they are very difficult to be changed or even challenged because they are regarded as objective. In positivism, the scientific method is believed to safeguard against subjective interpretations which is the spirit of methodologism. As previously mentioned, the criteria for objectivity in science is to use sound and established methodology; meaning that subjective interpretations can seep through leading to biased scientific knowledge. Biased scientific knowledge can reach the general public and lead to the problem of epistemological violence (Teo, 2011). Teo (2011) defines epistemological violence as an "interpretation of data that does harm to the *Other* is a violent interpretation, and more specifically, a form of violent action when the *Other* is constructed as inferior". This is usually done in psychological studies that compares race and sex. Twin Studies, and behavioral Genetics as a whole, are often used to attribute detrimental characteristics to innate genetic influences that could not be helped. Teo and Ball (2009) pointed out that the results of these interpretations do have real world implications such as policy changes or in perceptions of certain groups. For example, by putting forth the notion that there is a genetic component to criminology, a biased researcher suggests that a higher rate of incarceration of black males must be due to a common innate genetic component. These studies would then affect general perception of black males which may in turn lead to them to be incarcerated more.

Conclusion

This paper outlines some problems with positive knowledge; specifically, that of the positivist researcher and positivist method.

This is not to say that positivism is without merit as humanity has greatly benefited from the knowledge produced by these positivist sciences. This paper serves to point out the limitations of positivism in hopes of improving how one engages with scientific knowledge and research. It is the author's hope that upon reading this paper, one will consider the identity and aims of the researcher when evaluating the scientific knowledge that they contribute to the scientific community. One would be encouraged to be more critical of the research methods used and seek to understand if the methods are sufficient in encapsulating the essence of the phenomena of interest.

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