Is psychology a science?

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The debate over whether psychology is a science, art, or both, makes logical sense when considering that its historical emergence was heavily influenced by two disciplines, one scientific (physiology), and the other, non-scientific (philosophy). The application of empirically-based scientific methods by the natural sciences, to the study of human psychology is a historically recent event which is generally acknowledged to have begun in the latter part of the 19th century when Wundt set up his laboratory in Leipzig, Germany. Within the relatively brief timeframe of eighty years, scientific methodologies were applied to the study of conscious human thought, human and non-human behavior, as well as cognitive processes. This rapid evolution within the formative period of psychology may reflect a dynamic struggle to develop a unifying theory and laws which could explain all human experiences while recognizing the inherent methodological limitations which arose when considering non-observable mental phenomenon.

The fact that psychology took such a long time to emerge as a scientific discipline in the first place may very well reflect the difficulties involved in understanding human thought and emotion. Over time, it fell upon the behaviorists to adopt scientific methodologies employing controlled laboratory experiments, who ended up rejecting any non-observable or subconscious forces as causes of behavior. Even the current goals of psychology, which are to: 1) describe behavior in the most objective and detailed manner possible; 2) explain observed behaviors above and beyond what is obvious; 3) predict future behavior; 3) control the reoccurrence of undesired or maladaptive behaviors based on knowledge of antecedent conditions and predictable patterns; and 5) improve the lives of others in a

positive manner, attest to limiting the study to observable human phenomenon. If much of the subject matter of psychology is unobservable and not amenable to be being measured, then there is no way to be able to test hypotheses regarding these.

Science is intended to be objective, value-free, and positivistic, allowing for discernment of truths of the subject under study. In psychology, maintaining an objective, value-free study may prove difficult, since scientist-practitioners are likely to have biases and hold views about cultural and other issues that may be deemed to be important contributory factors. Some questions to consider are whether it is possible to have a totally objective study, and whether the scientific approach to the study of humans is appropriate or even desirable. Ethical considerations severely limit the amount of psychological experimentation which can be directly conducted on human subjects. As a result, extrapolation of experimental findings from animals to humans as well as retrospective studies are often relied upon to provide psychologists with what can often result in very poor evidence as well as science.

Kuhn (1970), a respected philosopher of science argues that scientists do not always conduct their research in the manner they suggest and their work may not be as objective as it claims to be. Again, scientists are a product of their environments and bring their personal ideologies and values into the lab. Frequently, evidence which conflicts with theoretical assumptions is disregarded resulting in attempts to select evidence which supports them. There are quite a number of historical examples of this. Research agendas

may also be affected by funding sources and career plans. All of these, issues collectively beg the question over how scientific science is itself.

Kuhn further argues that one characteristic of a science is that it has just one dominant paradigm or theory, just as the theory of relativity serves the discipline of physics. Psychology cannot make this claim on account that it has many competing paradigms. Furthermore, the hypothetico-deductive model, postulates that theories about the world should generate hypothesis which are falsifiable through observation and direct experimentation (Popper, 1959). Some of psychology's major paradigms are not falsifiable. A good example of this is psychoanalysis which has the ability to explain behavior, albeit, after an event has already occurred. Psychoanalysis is unable to predict behavior and it is impossible to test for the existence or non-existence of the unconscious.

Alternatively, behaviorism as already suggested, lends itself easily to scientific methodology given its' parsimonious theories of learning, and use of simple principles to explain a wide variety of human and non-human behaviors. Behaviorism has been responsible for advancing statistically precise and falsifiable hypotheses, and was based on a number of solid theoretical assumptions such as the Law of Effect and the role of environmental determinants and their influences on human behaviors. Cognitive psychology also adopts a scientific approach and relies heavily on observations and measurements of behaviors to develop models which might explain unobservable mental processes.

Kline (1998), argued that the various theoretical orientations within the field of psychology should be treated as separate and distinct sub-disciplines. Kline was particularly interested in developing a new form of psychometrics utilizing measurement theory, which would move psychology away from being seen as a social science and transform it into a pure science. There are at least four psychological sub-disciplines which clearly fall within the scientific domain. Two of them, behavioral and cognitive have already been discussed. Added to these are the cognitive-developmental and the those which fall within the biological domain, i. e. neuropsychology. The social approaches in psychology also appreciate that there is a strong element of science involved in understanding the social forces and environmental factors which influence human behaviors. Categorizing the sub-disciplines with physiological perspectives as " scientific", makes logical sense since biological functioning does not generally vary from person to person, and research in these areas are quite amenable to empirical scrutiny with good generalizability. Studies in these areas emphasize the impact of neuronal activity, genetic predispositions and other biological systems on behavior. The aim of such research is overwhelmingly scientific and nomothetic.

Psychological research, when it is specifically conducted on human populations can give rise to a number of unscientific findings. The problems associated with experimenter bias have already been alluded to. It is entirely possible for two psychologists to approach the same topic from two completely different points of view and both could find results to support their differing hypotheses by virtue of the different viewpoints their studies were originally intended to investigate. Demand characteristics may occur as

a result of human participants experiencing the research environment as a social situation that is influenced by bias. Failure to control for these factors will lead to unsound scientific conclusions.

Some psychologists strongly argue that the scientific approach is in itself dehumanizing and unable to capture the complexity and richness of conscious experience (Allport, 1955, 1961). The rejection of scientific psychology from the 1950s through the 1970s, stands as evidence that viewing human beings as strictly “ behavioral” beings was very limiting and did not take into account cognitive and ethological factors. Humanism, which places an emphasis on the study of the whole person, recognizes that an individual’s subjective experiences within the world may be the most important factor in influencing their behaviors (Frankl, 1985). This suggests that psychologists can only understand an individual’s behaviors by understanding that individual’s point of view.

Radical humanism places little value on science to explain behavior and deliberately steps away from determinism in favor of free will, arriving at a unique and in-depth understanding of the individual. Unlike science, the humanistic approach does not have an orderly set of theories and is not interested in predicting or controlling behavior. Miller (1969) expressed concern about the controlling aspects of psychology, and suggested that science should be more interested in gaining understanding of behaviors. His concerns were raised on moral grounds and he foresaw the possibility that the power differential inherent in psychology could be used for malevolent purposes.

It might appear from the foregoing discussion that the term “ psychology” may be difficult to define (Reber, 1995, Henriques, 2004), and this may be the principal source of the ongoing scientist-practitioner gap which exists in the discipline. It is further suggested that the current split between science and practice in psychology may be the result of differences between two epistemic attitudes: empiricism and romanticism (Lilienfeld, 2004). Whereby empiricists place a value on scientific evidence to understand human nature, romanticists would prefer to utilize clinical intuition even when confronted with well-validated statistical evidence (McHugh, 1994, Wood, Nezworski, Lilienfeld & Garb, 2003, Grove, Zald, Lebow, Snitz, & Nelson, 2000). When surveyed, the vast majority of clinical psychologists believe that “ alternative ways of knowing, for which the scientific method is irrelevant” should be “ valued and supported in the practice of clinical psychology (Nunez, Poole, and Memon, 2003).” The alternative point of view is overwhelming held by nonclinical psychologists (Kimble, 1984).

The American Psychological Association, recognizing that the discipline itself was divided over its “ scientific” status, appointed Sigmund Koch (1959-1963) to head up a study to gain some consensus on the question. Eighty eminent scholars were assembled to review the methods and theoretical assumptions which defined the research and practice of psychology. The results of that study were published in 1983 and basically concluded that psychology played a large role in describing human behavior, but was unable to explain or change it, and opinion rather than science prevailed in these endeavors. Koch went on to state “ The entire subsequent history of

psychology can be seen as a ritualistic endeavor to emulate the forms of science in order to sustain the delusion that it already is a science.”

Despite Kuhn and Koch’s reservations, there are those who feel strongly that psychology is, and should be a science by virtue of the fact that many psychological investigations employ the use of scientific methods and utilize research strategies which serve to minimize bias, increase objectivity and improve reliability. It appears that whether or not psychology is a science depends on one’s own philosophical point of view. It is also important to point out that there is no definitive philosophy of science or perfect research methodology.

Slife and Williams (1997) argue that psychology should not give up on striving for scientific methods if the discipline is to be rigorous. They concede that the methods which are appropriate to the natural sciences may in fact, not be suitable for the study of human beings, but they do encourage continued research into their development. It is recognized that many of the problems which are within the purview of psychology are not able to be resolved through the use of current empirical methods (Stam, 2004). Methodological pluralism, in particular, the use of triangulation might be a good compromise. Triangulation involves mixing methodologies and obtaining two or three different viewpoints of the topic under study resulting in dialectic of learning through the comparison of contrasts. (Denzen, 1970). Utilizing such a strategy increases the probability that research findings will result in high reliability and validity.