



RESEARCH ARTICLE

WESTERN PHILOSOPHY (DUALISM) AND AN INCOMPLETE SCIENTIFIC PSYCHOLOGY

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ABSTRACT

The present paper reviews the Western philosophy of Dualism and how it has impacted modern science. While dualism has been very successful at advancing physics and biology, it has had limited success at advancing psychology. Dualism has in fact resulted in the development of an incomplete scientific psychology in the 20th Century. Moreover, while dualism has helped humans to understand abstractly the laws and generalizations of natural phenomenon, it has simultaneously failed to connect humans to themselves, others, and to nature. An alternative stochastic model of scientific psychology is proffered for the 21st Century. Five distinct advantages are discussed to conceptually shift psychology to an explicit stochastic model of science in the 21st Century. When a stochastic model of scientific psychology becomes the standard for psychologists, it not only allows them to do better psychological science, but it also helps them connect to different individuals, groups, and cultures around the world.

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INTRODUCTION

Human beings cannot be studied like the orbit of planets, the fall of an apple, precise time measurements of cold atoms, or the exact design specifications of our engineered products. Human behavior and human processes are far more variable and random than either the large scale physical world or human engineered products. There are no laws or universals in psychology as there are in physics (i.e. the laws of gravity, electromagnetics, weak and strong nuclear force) (Hawking & Mlodinow, 2010). In psychology experiments, there are no exact and precise measurements, and we can only hope for relative or approximate replications (i.e., weak causality), not precise mathematical replications (i.e., strong causality), even under ideal methodological conditions involving random sampling, large cell sizes, random assignment to conditions, standardized procedures, and sophisticated univariate and multivariate inferential statistics.

A major obstacle preventing psychology from becoming a basic and accepted science in the 21st Century has been the failure to conceptually, theoretically, and methodologically separate contemporary scientific psychology from the dualistic tradition of Western Philosophy. Dualism, which is rooted in both Greek philosophy and Hebraic-Christian traditions, promotes a view of reality that distinguishes man from nature, subject from object, and mind from matter (De George, n.d.;

Stanford Encyclopedia of Philosophy, 2016; Wielemans & Chan, 1992). While the dualistic approach of Western Philosophy has helped the science of physics to discover the basic laws of the universe (i.e., the laws of gravity, the electromagnetic force, the weak and strong nuclear forces [Hawking and Mlodinow, 2010]) and the science of biology to discover the building blocks of life (i.e., DNA and RNA) (Osuri, 2003), that same dualistic approach, which encourages determinism, has consistently failed to help the science of psychology to discover basic laws and/or universals of human behavior. A much bigger problem, which has not helped physics, biology, or psychology, is that dualism in actual practice tends to promote, intentionally or unintentionally, alienation within human communities and society. Since dualism splits human consciousness and human experience into subject and object, it invariably separates humans from themselves, from each other, and from nature. By objectifying consciousness and experience in order to advance our knowledge of ourselves, nature, and the universe, we must simultaneously disconnect and detach ourselves from ourselves, one another, nature, and the larger universe.

We are not arguing that scientific psychology has not resulted in advancing our understanding of human behavior and human relationships. We are arguing, however, that these understandings are by no means lawful relationships and universal truths, and

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they do not exist outside or independent of human endeavors, as do, for example, the laws of nature. (In the classic view, scientists study natural phenomenon in order to make generalizations and predictions about nature, which exist independent of human endeavors.) Psychological understandings about human behavior are not discovered, but are constructed. Ironically, both the full successes (i.e., physics and biology) and the partial successes (i.e., social sciences in general and psychology in particular) of Western dualism to build various scientific enterprises has resulted in global alienation. The mixed success of dualism to advance science has disconnected human beings from themselves, from one another, and from nature, at a time in human history when human beings need to be increasingly cognizant of their impact on one another, other species, and the planet.

The purpose of the present paper was to assess how the Western philosophy of Dualism (i.e., subject versus object, mind versus matter, and man versus nature) set the stage for the development of an “incomplete” scientific psychology in the 20th Century. An incomplete scientific psychology that would dichotomize knowledge into subject and object (i.e., researcher versus research subject), objectify human experience (i.e., research subjects have the exact properties of physical objects), and falsely claim that the study of human psychology is objective, deterministic, and universal. Alternatively, the present paper proffers that a complete scientific psychology is only possible when we employ a stochastic scientific model. A stochastic scientific model of psychology recognizes that subject and object (i.e., researcher and research subject) always influence one another and that psychological data is in fact constructed and only measurable within a probability distribution. A stochastic model of scientific psychology embraces the inherently probabilistic nature of human behavior, psychological processes, and human experience(s). From both a functional and existential perspective, a stochastic model of scientific psychology reconnects human beings to themselves, others, and nature by increasing the probability of meaningful and positive life experiences.

The Western Philosophy of Dualism

While the Western Philosophy of Dualism has been extremely successful in advancing the science of physics and biology (i.e., subject versus object), that same dualism has had only limited success in advancing the science of psychology. The basic problem in psychology is that the act of dichotomizing introduces variability into the investigation of human behavior, psychological processes, and relationships (i.e., how humans behave, the way humans perceive and process information, and how they relate to themselves and others) whereas the same cannot be said in relation to the object of study in physics or biology. In physics (e.g., orbit of planets, the speed of light, the radioactive decay of uranium) and in biology and chemistry (e.g., DNA, RNA, composition of blood, fertilization of a female egg, the structure of the human genome) there are constants and a deterministic algorithm that is not evident in social science in general or psychology in particular. Psychologists, on the other hand, always affect or alter the object of study in psychology (i.e., other people) because psychology researchers must always construct a measure of psychological processes, which is oftentimes arbitrary and subjective, and interact with their experimental subjects in a

particular social context. Even if it were actually possible to remove any influence of the experimenter on the subject's responses it would never be possible to remove the social context that surrounds or encapsulates the data collection process, whether known or unknown to the research subjects, and, therefore, any research finding is always tied to a particular data collection situation. Pure objectivity, neutrality, universality, and lawfulness are not possible in psychology experiments. Dualism even affects and alters the way psychologists relate to each other (e.g., clinical versus experimental psychologists, academic versus applied psychologists), their students (i.e. undergraduates versus graduates), and the larger community (e.g., layperson versus professional).

An Incomplete Scientific Psychology

The dichotomy of experimenter versus subject, then, created the false impression that psychology experiments were objective and uncontaminated (i.e., that the experimenter and the experiment itself do not interact with the human subject), that threats both internal and external validity were controlled for and ruled out, and, therefore, experimental findings with American subjects could be universally generalized to all people. The whole idea of the “double blind experiment” was to guard against experimenters and subjects knowing information about the experimental manipulations that could influence and bias the results of an experiment. Depending on one's philosophical or ideological leanings, no experiment can control for the interaction of people and social context or the inherent variability and unpredictability of human behavior. Perhaps more importantly in the everyday affairs of human beings, the dichotomous thinking characteristic of dualism stratifies people into class divisions (e.g., normal versus abnormal, intelligent versus not intelligent, learning abled versus learning disabled, organic versus nonorganic or functional, etc.), which profoundly affects how people think and feel about themselves as well as their life opportunities. The basic dualism underlying modern science in general and modern scientific psychology in particular ironically creates the very social statuses, stratifications, and stereotypes that modern psychology hopes to eradicate. When Descartes developed the mind-body distinction (Skirry, 2016), arguing that the mind “thinks” and the body “does not think,” he also should have included the caveat that if his thinking catches on we should be prepared for a proliferation of mirror dichotomies that could arise in society (e.g., enlightened/unenlightened, holy/unholy, owner/worker, white/black, gay/straight, educated/uneducated, healthy/unhealthy, conservative/liberal, etc.).

The basic problem confronting 20th Century American Psychology was that the psychology experiment, as the official platform for scientific psychology, never really enjoyed a firm scientific foundation, at least as far as mainstream science was concerned. Twentieth Century American scientific psychology claimed to investigate human behavior and psychological processes objectively and empirically despite utilizing a select and self-confirming methodology which compromised scientific validity and reliability upon arrival. While most psychologists were quite content with their “scientific looking and sounding” methodology, the same could not be said for many mainstream scientists and laypersons alike. The stereotype of the experimental psychologist began to seep into the culture, not of an independent researcher uncovering the universal causes of

human behavior, but of the master manipulator or engineer of human behavior for arbitrary purposes (e.g., The Milgram experiment and the Zimbardo Prison experiment) (McLeod, 2007; McLeod, 2008a). Even mainstream 20th Century American Psychology started to react to itself and created an edifice of ethics for practice and research, but interestingly, never challenged the basic methodology which led to the alarm in the first place.

This was indicated by the following. First, American Psychologists in the 20th Century generally used non-random and convenience sampling procedures (e.g., white albino rats and undergraduate students [predominantly female] in forced subject pools) and only select methodologies (e.g., group experiments with small sample sizes, non-standardized written protocols, and ANOVA statistical analyses) to draw far reaching conclusions about human behavior and human psychology. Second, human data collected in psychology experiments to test the null hypothesis was consistently variable and imprecise (i.e., stochastic), not absolute and lawful. Since their inception, psychology experiments were never able to predict with certainty the exact response of a given subject in a given condition or to predict with certainty which subject in a treatment condition would differ from which subject in a control condition. Experimental psychologists did not even bother to construct confidence intervals around their variable data. Third, and in spite of the aforementioned, American educated and American trained psychologists (who have dominated the profession of psychology for more than a century) continued to speak and write unabashedly of their experimental findings in general and universal-like terms (e.g., the present study indicated that people “are more likely to,” “consistently scored,” “chose,” “demonstrated,” “indicated,” “systematically responded,” etc.) and to routinely assume their findings would automatically replicate, which later studies have shown that they do not (Sample, 2015). Implicitly and explicitly, then, 20th American Psychologists presumed that the results of tens of thousands of psychology experiments would automatically and cryptically generalize by default (i.e., without replication) to billions of people around the world (i.e., absurd).

In all fairness many 20th Century American scientific psychologists have not been completely oblivious to the above and have attempted in good faith to address various methodological shortcomings by qualifying their experimental findings. It is more common today, for example, for American scientific psychologists to state in the conclusion section of their experimental reports that their findings might be limited by a small sample size, might not be representative of the total population, how their findings might be contradicted by other experimental findings, or simply state what was not done in the present experiment. Such qualified findings, however, while intellectually honest, scientifically sophisticated, and well intentioned, do not challenge the underlying assumptions of the dominant scientific model (i.e., dualism, determinism, and objectivity), nor do they challenge the basic methodology by which the psychological findings were obtained (e.g., nonrandom/convenience sampling, “pooled” data and the inability to predict individual behavior, non-standardized written protocols, diverse and problematic statistical procedures, the almost total absence of mathematical formulae, and the failure to replicate, etc.). Qualified experimental psychology findings in

the 21st Century actually create a false impression and a false sense of security that the problem has been resolved.

Qualified experimental psychology findings in the 21st Century actually perpetuate the problem. They perpetuate a faulty model of scientific psychology that lingers on from the 20th Century and they impede the development of an alternative and more complete model of scientific psychology for the 21st Century (i.e., “kick the can down the road”). Qualified experimental psychology findings compete with and prevent the development of an alternative model of scientific psychology which is in fact more compatible with (1) the actual data collected by scientific psychologists and (2) the general model of science subscribed to by most scientists in the 21st Century.

A Stochastic Scientific Psychology

Qualified experimental psychology findings in the 21st Century have obviously no affect upon incomplete scientific psychology findings in the 20th Century nor do they map out a path toward a more complete scientific psychology in the 21st Century. We do not know, for example, what experimental findings can be reliably replicated (the cornerstone of modern science), “why” some actual experimental findings cannot be replicated (e.g., biased samples, changed historical conditions, technological advances, etc.), or the reason(s) for similar non-significant findings. Most importantly, qualified experimental psychology findings do not tell us what alternative scientific model(s) to employ to advance the science of psychology. The answers to the aforementioned are not possible within the current paradigm of scientific psychology. For psychology to become a basic and accepted science in the 21st Century, psychology must re-define itself explicitly and unabashedly as stochastic and mathematical, not deterministic. From a scientific perspective, then, psychology is the study of human behavior and psychological processes that evolve across time and situations in a probabilistic manner (Kilbourne, Kilbourne, & Goodman, 2014).

There are five distinct advantages for psychology to shift conceptually to an explicitly stochastic model of science in the 21st Century. *First, a stochastic model of scientific psychology increases external validity by moving the psychology experiment out of the laboratory and into the field.* Ever since Wundt (McLeod, 2008b) introduced the first psychology laboratory, the psychology laboratory has been confined by four walls. Confining psychology experiments to a particular physical location profoundly limits both the random sampling of participants and situations as well as the “face reality” of the psychology experiment (i.e., compromises external validity). On the other hand, when psychology experiments employ scientific sampling procedures (i.e., random not non-random, convenience sampling) and large sample sizes (e.g., to obtain a given effect size) in field settings, psychologists increase the external validity of experiments to generalize to others and to draw valid statistical inferences. Kilbourne (2014) introduced the Operational Mobile Psychology Laboratory (OMPL) to address compromises to external validity. The OMPL allows psychology researchers to randomly select both participants and situations within the community and to randomly assign participants and/or situations to experimental conditions.

Second, a stochastic model of scientific psychology encourages the use of computer programmed standardized protocols to insure uniform experimental manipulations, instructions, procedures, and measures, etc., and which, in turn, increases both internal validity and the likelihood of replication. A stochastic model of science encourages psychology researchers to use computer programs to exercise precise control over content, delivery, and timing of all experimental protocols and, therefore, increases the probability of measuring and obtaining significant psychological effects. The use of computer programs in experimental psychology also increases our confidence in psychological data by decreasing the ways that psychology data can be manipulated or falsified (Kilbourne & Kilbourne, 1983). The OMPL (Kilbourne, 2014), for example, uses a computer-based program that is directly linked to the internet by the use of laptops, tablets, and/or smart phones in order to conduct trainings, investigations, medical tests, scientific experiments, and/or observations of human and animal behavior and mental processes. Because the OMPL connects to the internet, this expands its flexibility to collect data, in principle, at any time or location where internet services are available. Data collected can be backed up offline.

Third, a stochastic model of scientific psychology recognizes that both replication and non-replication are important to advancing our understanding of human behavior and psychological processes. Non-replication of a psychology experiment has a different meaning in a deterministic model than a stochastic model of science. In a deterministic model of science, non-replication is a failure of methodology or science. In a stochastic model of science, non-replication can provide useful scientific information about changed historical conditions, cultural conditions, economic conditions, and different probabilities of response from participants from the same population, improved technology, or the failure of method (i.e., biased samples). A stochastic model of science in psychology recognizes *a priori* that probabilities change for many different reasons and what was true at one time may not be true at another.

Fourth, a stochastic model of scientific psychology supplements traditional statistical analyses of group data with mathematical and statistical procedures that permit probability estimates for individual and group behavior (e.g., Markov transitional tables, Quadratic Function Equation, Process Six Sigma, Monte Carlo Simulations, and/or simple confidence intervals, etc.). For example, Kilbourne, Kilbourne, and Goodman (2014) and Kilbourne, Kilbourne, Goodman, and Harned (2016) used Markov Transitional Equations in two separate studies with two distinct methodologies, one quasi-experimental and one experimental, to predict with high probability an individual's response at Time 2 given their response at Time 1 (e.g., 94% and 91%, respectively). Knowing the probability of an individual's response under certain conditions bridges the gap between research and application by providing practitioners with information about how a specific individual is likely to respond in a given situation. Furthermore, knowing the probability of outcomes associated with different frequency distributions increases the likelihood of replications and practical applications (Kilbourne,

Kilbourne, & Goodman, 2014; Kilbourne, Kilbourne, Goodman, & Harned, 2016).

Fifth, a stochastic model of scientific psychology provides a more targeted or magnified analysis of within group behavior and individual differences. While hypothesis testing and inferential statistics do not allow the experimenter to accept the null hypothesis (e.g., we cannot conclude that two studies which found no differences between two conditions are the same or a replication of one another [Tucker, 2016]), obtained non-significance requires a different approach in a stochastic model than a deterministic model of psychological science. A stochastic model places an electron microscope on the frequency distribution of responses within each of the respective groups that did or did not differ. Within the different groups there are: 1) individuals who were differentially affected by the experimental manipulations, 2) individuals in the control condition who may have responded in the direction of the treatment for some unknown reason(s), and 3) individuals within the treatment condition who may not have responded in the direction of the treatment for some unknown reason. These individual differences are likely to go unnoticed, certainly not scrutinized, in the typical group comparisons, and they may have profound implications for understanding *a priori* individual differences as well as differential dosage levels (i.e., psychotropic medications and therapy) in treatment settings.

A New World View: Reconnecting to Self, Community, and Nature

In order to write about life, first you must live it.

- Ernest Hemingway

In a Hemingway sense, you must live your life before you can write about it, but what does that have to do with a stochastic model of scientific psychology? Simply put, the model of science that 21st Century Psychologists subscribe to should reflect their life experiences. It should reflect how psychologists themselves, their students, their research participants, their clients, live and experience life. It should have "face validity." The model of science that 21st Century Psychologists utilize and employ should fit the everyday experiences of those we hope to benefit like a glove fits a hand. We all live in psychologically and behaviorally stochastic worlds. The only universal. **Psychology is the study of human behavior and psychological processes that evolve across time and situations in a probabilistic manner (Kilbourne, Kilbourne, & Goodman, 2014).** A stochastic model of scientific psychology, then, becomes the standard by which psychologists connect to individuals and groups in different cultures and societies around the world, and it becomes the way that psychologists convey their special knowledge about those different psychological probabilities to different people in different life situations and different cultures.

While dualism has helped humans to understand abstractly the laws and generalizations of natural phenomenon, it has simultaneously failed to connect humans to themselves, others, and to nature. As long as there exists the dichotomy of subject versus object, mind versus matter, and man versus nature, etc., we are stuck cognitively, emotionally, and relationally with an unresolvable dilemma, we are separate and apart from ourselves, others, and nature. Each of us is alone, and down deep inside we are all afraid and angry in that existential space.

It may be as basic and inescapable as the “figure/ground relationship” which dichotomizes sensation, perception and consciousness. Dualism thus results in alienating each of us from ourselves, others, and nature. Individually, we may be surviving, even thriving, but as a civilization and species, we are neither happy nor healthy. We are all at war with nature and with each other. A much needed correction is called for: Dualism is one of many methods of science that can help us understand our physical universe and to some extent our biological selves. Dualism is profoundly limited in helping us to understand either our psychological selves or the subatomic world of the small scale. Dualism is a good method of science for some things and not for others; generally speaking, it is a very poor life philosophy to apply to ourselves, how we relate to others, and/or how we relate to nature.

Alice: I simply must get through!

Doorknob: Sorry, you are much too big. Simply impassable.

Alice: You mean impossible?

Doorknob: No, impassable. Nothing's impossible.

- *Alice in Wonderland (1951)*

It is doubtful that psychologists can solve all the world's problems. However, psychologists can do their part and help to solve the world's problems. This is best accomplished if psychologists adopt a stochastic model of science, which can help people transcend divisive and conflict-inherent dichotomies of self versus other, in-group versus out-group, and man versus nature. A stochastic model of psychological science can help people from very different walks of life and cultures to better appreciate, embrace, and celebrate the larger universe of probabilities of human existence, to help all of us recognize that we share a common humanity, and that we are all “part of not separate from” nature. Additionally, a stochastic model of psychological science promotes an active agency/celebration versus determinism/catastrophe (AC-DC) philosophy of life. AC is defined by human beings who thrive when they see that they have a range of possibilities by which to construct who they are, the lives they live, the relationships they form, and the world in which they live. DC, on the other hand, is defined by human beings who feel a deep sense of distress and despair when they believe their lives are determined by simple inexorable dichotomies (secular versus non-secular, male versus female, rich versus poor, black versus white, gay versus straight, capitalist versus socialist, white collar versus blue collar worker, etc.) that limit life possibilities and may result in the elimination of all human existence. A stochastic model of science helps us to appreciate that human existence is fluid, that it is always changing, and no one, big or small, rich or poor, young or old, can stand in the same spot in the river twice and no one ever stops dreaming. *Nothing is impossible.*

CONCLUSION

Dualism is a two-edged sword. On the one hand, it has resulted in the discovery of laws and universals in the physical and biological sciences. On the other hand, it results in alienation by disconnecting humans from themselves, others, and nature. Dualism was never well-suited for psychology because subject and object can never be separated, precise measurement can never be obtained, and because the dichotomies of dualism

focus on the very divisions in society which are the antitheses of mental health and social adjustment.

An alternative and more complete model of scientific psychology was proffered whereby psychology is re-defined as the study of human behavior and psychological processes that evolve across time and situations in a probabilistic manner (Kilbourne, Kilbourne, & Goodman, 2014). This alternative, more complete model of scientific psychology, puts psychology on firm scientific ground in the 21st Century (i.e., increased scientific reliability and validity [external and internal]) and helps humans to reconnect to themselves, to one another, and to nature. Psychologists of all persuasions purport to want to help their students, clients, research participants, individuals and families within the society, to live better lives. As long as psychologists subscribe to a deterministic model of psychology, they will always fall short in achieving their ideals to help the individual, community, and society. It is only when psychologists explicitly embrace a stochastic model of psychology that they can extol the diversity and complexity of human existence and hope to benefit human kind in a significant way.

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