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Abstract

Contemporary psychology is once again at an inflection point with regard to its philosophical foundation. In this paper, we evaluate two prominent philosophies of science within the field of psychology—post-positivism and social constructionism—that are logically incompatible but often treated as equally valid by theorists, researchers, and practitioners. We discuss what each philosophy of science offers in terms of ontology, epistemology, and pragmatic justifications using the structure of a proposed argument, counterargument, and rebuttal. From this evaluation, we contend that post-positivism is a logically preferable philosophy of science for both the progress of collective knowledge and the sustainability of psychology as a science and therefore should guide future theory and research. We conclude by exploring implications for psychology including ways that social constructionist critiques can be employed to improve post-positivist approaches to psychology.

Keywords: psychology, post-positivism, social constructionism, philosophy of science, correspondence theory, coherence theory, pragmatism, epistemology, ontology

Imperfectly Known or Socially Constructed? What is Truth Again?

How does one know if a claim is true? This question is at the heart of centuries of debate and discussion. Is truth an objective reality to be discovered? Or, is it a socially constructed conclusion? More specifically, is the scientific approach used in psychology a socially constructed value system? Or, are there principles, observations, and rational arguments dictating psychology's systematic approach to science? This debate has become all the more salient with critiques in recent years questioning whether psychology should even be considered a science at all (Berezow, 2012; Jogalekar, 2013).

This, of course, is not a new debate; it has played a central role throughout psychology's history, and the answer has significant implications for the future of psychology (Feist & Gorman, 2013; Pilgrim, 2013). Theorists, researchers, and practitioners in the field must give sufficient consideration to the basis for their work and claims. As such, in this paper, we will argue for the merits of post-positivism and its utilization of the correspondence theory of truth, as opposed to its alternative, social constructionism and the postmodern thought that characterizes a dominant worldview in many cultures today (Inglehart, 1997). Ultimately, we will conclude that the tenets of post-positivism are logically preferable to social constructionism for the future of psychology. That is, there is an objective reality that can be known, albeit imperfectly, by relying on standards for empirically testing the validity of claims against observed data. Moreover, we suggest that social constructionism offers an internally inconsistent philosophy (i.e., the claim that "truth does not exist or cannot be known" is itself a truth claim). In contrast, it will be argued that a post-positivist approach allows for the accumulation of knowledge and the ability to predict future as yet undiscovered principles and relationships.

In the following sections, the terms necessary for presenting our argument will be defined. Subsequent sections will then present our arguments in three steps. First, the initial arguments in support of post-positivism and its use of correspondence theory will be presented. Second, a number of counterarguments both critiquing post-positivism and supporting social constructionism will be presented. Third, rebuttals to these counterarguments will be presented. Following these arguments, specific implications for how psychologists can maintain integrity to the principles of post-positivism while addressing critiques and concerns raised by social constructionists will be discussed.

Philosophical Foundations

To begin, a clear definition of the differences between post-positivist and social constructionist philosophies must be established. Post-positivism in this paper is defined as the view that there is one reality, but that it is “only imperfectly and probabilistically apprehensible... [such that] findings are probably true” (Guba & Lincoln, 2005, p. 193). Social constructionism, contrastingly, is a relativist position characterized by rejecting that “either reality or validity are absolutist...; rather, they are derived from community consensus regarding what is ‘real,’ what is useful, and what has meaning” (Guba & Lincoln, 2005, p. 197; Schwandt, 2000). The two philosophies primarily differ with regard to epistemology (i.e., the study of knowledge) and ontology (i.e., the study of reality). Specifically, the two paradigms take alternative stances on how to define reality and the extent to which humanity is capable of knowing reality (Ponterotto, 2005).

Positivists and post-positivists approach psychology as an empirical science where truth can be discovered, whereas social constructionists approach psychology from a phenomenological or postmodern perspective where truth does not exist absolutely, but can only

be understood as social construction local to a specific context (Feist & Gorman, 2013; Gergen, 2001). To elaborate, the post-positivist approach accepts the ability of each individual to know (albeit imperfectly) the world via observations and subsequently convey this knowledge through the use of language; social constructionists, however, would argue that the language itself is socially constructed and, therefore, it bears the real truth or meaning for any given claim (Hansen, 2004).

Historical Roots

Psychology as a science has its philosophical roots in the modernist perspective of positivism (Çakir, 2012). Considered to be a perspective that came to (and some say still does) dominate scientific pursuits (Guo, 2015; Hunt, 1994; Ponterotto, 2005), this paradigm posits that the truth of a claim relies on the claim being either logical or verifiable through an empirical method (Cacioppo, Semin, & Berntson, 2004; Meyers, 1975). In other words, claims must either hold up logically or be verified with empirical data, and one's observations of the world can be valid, objective conclusions (Alevesson & Sköldbberg, 2010; Hansen, 2004). That is, the values, biases, culture, experiences, language, and all nonobjective aspects of the researcher should bear as little influence as possible on the collection of data and the *post hoc* formulation of theory. Collected data can be relied upon as objective representations of reality such that values and human fallibility are minimized. Thus, for the positivist, there is an objective and knowable truth that can be verified via either logical or empirical demonstrations, both of which serve as objective ways of knowing reality (Ponterotto, 2005).

The perspective of positivism, however, would subsequently endure two distinctions that gave birth to the philosophy of post-positivism (Ponterotto, 2005). First, whereas the positivist emphasizes the verification of claims as the way to demonstrate truth, the post-positivist

perspective places greater emphasis on the notion of falsifiability in demonstrating truth (Çakir, 2012; Ponterotto, 2005). To elaborate, according to Popper (1959), a claim can only be scientifically meaningful if there is an observation that could possibly make it false. For example, the claim that “all doves are white” can be easily falsified by simply providing one nonwhite dove. A non-falsifiable claim, however, is one for which there exists no possible observation that could make it false. For example, the claim that an omnipotent, omnipresent, and omniscient God exists is a non-falsifiable claim because there is no possible observation that prevents such a deity from possibly existing. By definition, it could never be shown as false. Thus, according to Popper (1959), in order for a claim to bear any scientific meaning, it must be able to be falsified, and claims that cannot be falsified have no meaningful place in science.

The second aspect of positivism that was eventually called into question is the belief that human beings are capable of objective knowledge (Ponterotto, 2005). Specifically, Kuhn (1970) suggests that science occurs in a paradigm or worldview that influences which research questions are asked, how the data is interpreted, and what conclusions are drawn. In *The Structure of Scientific Revolutions*, he asserts that “the existence of the paradigm sets the problem to be solved... [and] is implicated directly in the design of apparatus able to solve the problem” (p. 27). Embracing and building on this perspective, Gergen (1973) argued that psychological findings and theories throughout history ultimately reflect the latent values of society and culture. These critiques and concerns paved the way for a polar contrast to both positivism and post-positivism: postmodernism.

One of the central tenets of postmodernism is a denial of objectivity in human knowledge (Guba & Lincoln, 2005). Postmodernists claim that all human knowledge is influenced by a number of factors specific to the individual and his or her community (e.g., values, biases,

culture, language, etc.). Thus, all knowledge is ultimately “a byproduct of communal construction,” and therefore lacking in objectivity (Alevesson & Sköldberg, 2010; Gergen, 2001, p. 806). Within this view, and most relevant to this paper, is the philosophy of science known as social constructionism, which follows the postmodernist belief of human knowledge being nonobjective and communally constructed (Hansen, 2004).

From this perspective, there is no justification for believing in an apprehensible, objective reality because there is no possible way to objectively and empirically know whether or not this reality exists (Schwandt, 2000)—or to objectively and empirically know anything! Thus, social constructionists would conclude that there is not one objective reality, but rather several equally valid realities (Guba & Lincoln, 2005; Ponterotto, 2005). To better understand this perspective, consider the idea that, if everyone is special, then by definition no one is special. The same thought process underlies social constructionism. If every belief is nonobjective, then by definition no belief is nonobjective, meaning that all beliefs are equal insofar as they all bear equal degrees of objectivity; they represent equally valid realities.

Many have discussed the possible deleterious consequences on scientific progress, human knowledge, and societal institutions if the scientific community were to embrace a philosophy that “jettison[s] the idea of aiming at ‘the truth’” (Haig & Borsboom, 2012, p. 273; Locke, 2002). Nevertheless, social constructionism begins with a compelling premise: no human is truly objective, regardless of the tendency to believe otherwise (Pronin, Gilovich, & Ross, 2004). However, this begs several questions. Is there an alternative way to acknowledge the imperfection of human knowledge without moving to a logical extreme of several equally valid (and thus equally invalid) realities? Moreover, can this be done while still remaining accountable to empirical standards for science? For the post-positivist, the answer is yes. According to the

post-positivist, social constructionism is not the only solution to the concern over a lack of objectivity in human knowledge. Rather, post-positivism is a somewhat modified form of positivism that embraces the two distinctions of (1) an emphasis on falsifiability and (2) a humble acknowledgment of human fallibility (Ponterotto, 2005).

In many ways, social constructionism and post-positivism share a common ground in the way that each philosophy denies the positivist's belief in the objectivity of human knowledge (Jost & Kruglanski, 2002). Yet, from there, social constructionists go on to conclude that no objective truth exists (Guba & Lincoln, 2005). In contrast, post-positivists conclude that an objective reality does exist but human's understanding of it will always be imperfect.

Correspondence Theory

If post-positivists say that there is an external, objective reality that can only partially be known, the challenge becomes establishing a theoretical framework that allows one to assess the extent to which claims match this external reality. This is the correspondence theory of truth. From this perspective, a claim is valid insofar as it corresponds to observations of the world (Haig & Borsboom, 2012; Shadish, Cook, & Campbell, 2002). Thus, there must be standards and procedures for establishing the validity of these observations (Jost & Kruglanski, 2002). For the post-positivist, this theory of truth is crucial because it becomes the maxim by which one could theoretically come to know, albeit imperfectly, objective reality. In other words, the post-positivist's goal of knowing truth relies on a belief that the truth can be found in that which corresponds to observations of the world.

This establishes the framework for the boundaries of the current debate. However, it doesn't capture the depth of arguments and counter-arguments that can be raised by adherents of social constructionism and post-positivism. The following section will include several of these

arguments, counterarguments, and rebuttals to evaluate the assertion that post-positivism and its reliance on correspondence theory brings one closer to objective truth than social constructionism.

The Convictions of a Post-Positivist

To begin, a series of claims will argue that psychology is best served when built on a post-positivist foundation. Three of the central arguments are presented below that reflect the ontology, epistemology, and pragmatic justifications for the post-positivist position.

Argument #1: There is an Objective Truth, Regardless of Us Knowing It

When deconstructing the post-positivist perspective, there is an ontological claim being made that there is an objective reality (Hansen, 2004). Of course, to the social constructionist and most postmodernists, this assumption is just that—an assumption. In contrast, social constructionists would posit that nothing is objective because all knowledge is filtered through a subjective lens (Gergen, 2001; Guba & Lincoln, 2005). However, even if it is only an assumption, and even if all are truths are imperfect because they are filtered through a subjective lens, the post-positivist assumption that an objective truth exists may hold as a *logically* valid argument, albeit an *a priori* one. To elaborate, first consider the social constructionist argument: all truth and knowledge is filtered through language, culture, biases, etc.; therefore, there is no justification for concluding that an objective truth exists. Yet, even if reality is filtered through the lens of a human mind, this would imply that reality was objective prior to the filter, meaning that there is an objective reality in existence. Perhaps then, it is ill-advised to abandon belief in an objective reality simply because the interpretation and expression of it is subjective. Locke (2002) articulates this point with much zest:

“The objective pursuit of knowledge is to be replaced by ‘language games’... because, the postmodernists claim, language is not a reflection of one’s inner ideas about the world but something that itself constructs reality. How language gets this magical power is never discussed” (Locke, 2002, p. 458).

The post-positivist argues that, even with the subjectivity of human interpretation, one can still conclude that some form of objective reality exists prior to its interpretation. The next concern, then, is how one mitigates the imperfection of this interpretive process.

Argument #2: Imperfect Knowledge is not Constructed Knowledge

For the social constructionist, the biases that make objective knowledge impossible (Ackerman et al., 2006; Ostrom & Sedikides, 1992; Robins et al., 1996) provide support for the idea that all claims should be considered as equally imperfect and, therefore, equally valid (Gergen, 2001). In other words, imperfect knowledge essentially equates to constructed, equally valid knowledge. On the other hand, post-positivists argue that, even if human knowledge falls short of perfect objectivity, there are criteria for belief that can be used to test whether some claims correspond to reality more so than others (Haig & Borsboom, 2012). These criteria allow for comparisons between claims so as to assess the degree of imperfection in the claim. In other words, human observations and scientific pursuits being imperfect does not mean that all claims are therefore constructed and equally valid. Rather, the correspondence theory of truth allows one to assess the degree to which a given claim corresponds to observations of the world, thereby demonstrating an amount of validity that may be more or less than that of other claims.

Whereas post-positivism relies on this criteria of correspondence, postmodern thought and other constructionist perspectives are largely driven by either relativist or relative pragmatic conceptions of truth, meaning that truth is not absolute but rather unique to the context and needs

of each individual (Schmitt, 1995). Specifically, relativism denies the existence of objective truths, and pragmatism bases the truth of a claim on the degree to which it is useful to believe in said claim, regardless of whether or not it matches empirical observations. By claiming correspondence theory as the optimal theory of truth, however, post-positivists utilize systematic observations of the world as the basis for assessing the validity of claims, allowing one to differentiate the levels of imperfection between claims.

Argument #3: Post-Positivism Helps the Constructionist, Psychology, and Society at Large

So long as there is a silver lining to a given perspective, there is a pragmatic argument to be exploited. Here, three specific pragmatic benefits of post-positivism will be discussed. First, the benefit of post-positivism for the social constructionist is the ability of this approach to resolve concerns over oppressed voices. To elaborate, social constructionists often argue that feminist, racial minority, Marxist, and other non-majority voices are commonly suppressed, ignored, or actively censored within a post-positivist model (Gergen, 2001). Yet, while these individuals typically go on to espouse the equality of these voices, they fail to offer any normative guidance for identifying the predictable, systemic influences that repress minority voices, nor do they provide evidence of the effectiveness of strategies for ensuring their inclusion. In fact, under a constructionist worldview, these research-based recommendations could only be considered as local, ideographic perspectives. Contrastingly, the empirical processes in post-positivism allow one to study, understand, and accurately predict the systematic biases within a group or culture (Hogg, 2010), the effectiveness of interventions to correct such biases (Crano & Seyranian, 2009), and the biases within the observers themselves (Robins, Spranca, & Mendelsohn, 1996).

A second benefit of post-positivism extends to psychology as a whole. Specifically, the continuous pursuit of truth from a post-positivist perspective enables one to generate working models and theories of phenomena that can subsequently be tested. These models of the world can be amended and abridged over time to more adequately represent the collective observations of the world. Moreover, these models can also be used to apply scientific findings to practical settings, creating avenues for future research and evaluation. Going back to the example of non-majority voices, a post-positivist approach would allow for robust and generalizable models to address the questions of which voices are ignored; which processes promote certain voices over others; and which process effectively establish egalitarian social systems? Overall, the ultimate trend of this process is the progress of knowledge as opposed to the constructionist trend that may inadvertently promote stagnation by way of accepting anything as valid; this stagnation represents “the dead end of philosophy” that Locke (2002, p. 458) and others (e.g., Sokal & Bricmont, 1999) claim is the ultimate conclusion of postmodernism.

One final benefit of post-positivism is its implication for society at large. Specifically, there may be potential deleterious effects of social constructionism on the pursuit of establishing a moral or good society. For example, Locke (2002) notes that the logical end of social constructionism is that no claim is more or less true than another, meaning that all claims are equal. Within this view, there is no meaningful difference between what many consider to be morally right and wrong; morality is unique to the individual. Thus, there would be no moral justification for penalizing, punishing, or even personally judging the behaviors of criminals, terrorists, etc. (Talbot, 2005). If taken seriously, the implication of such a conclusion is the abandonment of the pursuit of a good society as all societies, regardless of whether they value equality, justice, peace, etc., would be considered equal. Post-positivism, on the other hand,

allows for the study and rational conversation of morality and good societies at a level beyond relativism. In this paradigm, universal or logically derived ethical maxims can be promoted as a standard for assessing the goodness of a society, which can self-correct with time as knowledge accumulates (Talbott, 2005).

Critiques to an Overly-Convicted Perspective

Nevertheless, for each of the aforementioned arguments regarding ontology, epistemology, and pragmatic justifications, there are a number of compelling counterarguments.

Counterargument #1: Where is the Observed Proof of External, Objective Reality?

In regards to the ontological argument that an objective reality exists via one's perceptions, one noteworthy counterargument comes from Descartes (1641/1993). Tailoring Descartes's (1641/1993) argument to this conversation, even if post-positivists accept the imperfection of human knowledge, they still assume that one's observations reflect something external to the human mind. In other words, there is an assumption that everything perceived is external prior to its perception and interpretation. However, as Descartes (1641/1993) suggested in his *Meditations on First Philosophy*, such an assumption would be ill-advised because there are times when one's senses can be deceitful, as is the case with any optical illusion. This argument can be extended even further to the thought experiment that life could simply be a realistic dream; one's mind could be connected to an advanced simulation or matrix machine; or one could have been drugged with something so potent that all perceptions are successfully deceiving. Overall, it is entirely possible that one's senses are always deceitful, thereby preventing one from ever fully believing in objective reality.

Furthermore, it would be hypocritical for a post-positivist to believe in the existence of a purely objective reality because this claim is not empirically testable. To elaborate, even though

empirical post-positivists acknowledge the fallibility of human knowledge, they nonetheless conclude that there is still objective reality that can be known imperfectly through empirical methods (Ponterotto, 2005). Yet, the social constructionist would argue that these empirical methods cannot demonstrate the superiority of one philosophical claim about reality over another because there is no way to empirically test reality in a non-objective manner. Moreover, these empirical methods cannot truly demonstrate the objectivity of any claim considering that any empirical test of said claim would be interpreted by a non-objective human. Thus, the argument that an objective reality exists is not a testable claim, essentially making it a faith-based belief that is no more or less valid than any other perspective.

Counterargument #2: Imperfect is *Functionally* Equivalent to Constructed

The inability to empirically demonstrate objectivity poses a considerable flaw to the epistemological position of post-positivism in that it prevents one from making assessments of the amount of objectivity that a given claim may have. In other words, if a claim is based on imperfect knowledge, how is one to say that the claim is only mildly imperfect as opposed to being 100% imperfect (i.e., not true at all)? Likewise, how can one say that one imperfect claim is more or less true than another imperfect claim? Some may retort that the tactic for evading this critique is to rely on a consensus amongst the claims of several observers or experts so as to demonstrate the notion of interrater reliability (Shadish et al., 2002).

However, even if there are multiple people making observations, how can one know the objectivity of the consensus taken from the group? The conclusion of a group, even with high interrater reliability, does not necessarily demonstrate objectivity or validity, but rather simply agreement between several imperfect claims. Consider, for example, some of the more infamous instances of a consensus or agreement amongst experts that resulted in events or decisions that

many would now consider to be invalid in a number of ways (e.g., consensus amongst experts in Nazi Germany that the Jewish population was biologically inferior, and belief in U.S. culture for many years that African Americans and women did not deserve the same rights as white males). Consensus, which is the mark of high interrater reliability, does not necessarily suggest inherent rightness, validity, or truth. Thus, the objectivity of a claim may still be unattainable even with high interrater reliability, thereby posing the concern that the objectivity of all claims may be unattainable and, for all functional purposes, equal.

Counterargument #3: Pragmatic Arguments Go Both Ways

There are several potentially harmful consequences of post-positivism. Gergen (2001) presents a helpful discussion illustrating these consequences. First, if one accepts that all science is approached from certain established paradigms (Kuhn, 1970), as both the empirical post-positivist and social constructionist do (Jost & Kruglanski, 2002), then “the individual scientist is deemed rational only if he or she adopts the codes of discourse common to his or her particular community of science” (Gergen, 2001, p. 805). Thus, the post-positivist accepts validity in a claim only if it endures the standards and protocols that have been established in that community. This presents several harmful consequences because this system essentially oppresses and marginalizes groups who are not represented well in the community establishing these rigorous standards. This results in unheard voices from those who have not historically been represented in scientific communities—more often than not, those who do not fit the Caucasian, male stereotype. These critiques can be found elsewhere as well (see Eagly & Riger [2014] for a review of feminist critiques of positivism).

Moreover, one could extend the pragmatic argument against post-positivism even further to say that the strict adherence to previously constructed standards might have harmful

consequences in regards to research and publishing. To elaborate, too strict of scientific norms and values may contribute to a bias against replication studies (Neuliep & Crandall, 1990, 1993); a bias against publishing negative (i.e., non-significant) results, thereby increasing the risk of type I error in knowledge (Cortina & Folger, 1998; Greenwald 1975); and the pressure that these biases place on researchers to commit questionable research practices (QRPs; John, Loewenstein, & Prelec, 2012; Stroebe, Postmes, & Spears, 2012).

The Post-Positivist Rebuttal

The criticisms of post-positivism are compelling. The temptation is to land somewhere in the middle (e.g., sometimes psychology should use a post-positivist approach, sometimes a social constructionist approach). The problem, of course, is that the two philosophical paradigms are logically incompatible, especially when focusing on ontology and epistemology. Either there is an objective reality that we can imperfectly know or there is not. This, of course, is not a problem for the social constructionist who believes that contradictory claims can coexist, so long as the claims are not generalizable beyond the specific context at hand. However, a hypocrisy of this perspective emerges when the social constructionist relies on research that a certain cancer treatment will be more effective than another; on the aerodynamics of airplane flight; or that certain practices are more effective at reducing the spread of HIV/AIDs than others. Each of these examples rely on research aimed at providing robust, generalizable claims based on the existence of an objective reality. As most post-positivists and social constructionists alike commonly rely on this research every day, further deliberation about ontology, epistemology, and pragmatic justifications is warranted. With this in mind, the following sections will consider the post-positivists' rebuttals to each of the aforementioned counterarguments.

Rebuttal #1: *Cogito Ergo Sum*—an Age-Old Justification for Objective Reality

As noted previously, Descartes's (1641/1993) arguments suggest that one's senses are not a trustworthy representation of an external, objective reality because they could always be wrong. Taken to its logical extreme, this can lead one to believe that there is no justifiable reason to believe in an external, objective reality at all. However, the issue with Descartes's (1641/1993) claim is that it is not falsifiable; there is no way for anyone to disprove it. Consider a similar example: there is no way to empirically measure and disprove the existence of God, but that is hardly a decent reason to believe in God's existence. Likewise, there is no way to empirically measure and disprove that one's senses are not always deceitful, but this is hardly a decent argument for no longer trusting one's senses. Moreover, untrustworthy senses do not *ipso facto* prove that everything is thereby relative and that objective reality does not exist. In fact, the so-called "hard sciences" would suggest just the opposite. Objective reality is true whether people believe it or not; it is independent of social consensus at any given point in time (Sokal & Bricmont, 1999).

Additionally, Descartes (1647/1983) would later suggest that even if one cannot disprove sense deception arguments, one can still logically deduce that something objectively true has to exist. His well-known conclusion of this argument, *cogito ergo sum*, translates to the sentiment of, "I think, therefore, I am." This adage suggests that something objective has to exist because, without it, one would not be capable of thinking in the first place. To elaborate, even if one's senses are deceiving, he or she can at least conclude that the senses exist; even if everything one observes is occurring within his or her head, it can at least be concluded that the head exists; even if one's mind is connected to a simulation machine, one can at least conclude that the simulation machine exists; even if one is experiencing an extremely lucid drug effect, one can at

least conclude that the drug exists; and so on and so forth. Thus, the mere state of one thinking is enough proof of the objective existence of at least one thing, even if one's interpretation of it is imperfect.

Rebuttal #2: Imperfection can be Mitigated, but There is No Limit to Constructed Truths

With regard to epistemology, post-positivism acknowledges that the scientific process is not without limits or values. However, the post-positivist has adopted practices and criteria via correspondence theory that are self-reflexive and self-correcting. That is, the standards that post-positivists embrace (e.g., that one's predictions must correspond to observations in a reliable manner) can mitigate the imperfection of claims. Moreover, in a post-positivist research paradigm, these claims can be falsified through empirical testing (Popper, 1959). Predictions can be made and then tested to determine if the results are consistent. In contrast, in social constructionism—a perspective in which all truths are equal—there is no method for falsifying claims because all claims are unique to the individual, meaning that there is no limit to what can be true. All predictions and all outcomes are equally valid because there is no standard to determine what is or is not correct. Thus, while values influence the pursuit of truth in any philosophy of science, an imperfect truth garnered from post-positivist research bears more “trueness” than a socially constructed truth because it is both falsifiable and pursued using rigorous standards for mitigating imperfection. For post-positivists, standards dictate whether claims are true; for social constructionists, anything and everything can be equally true.

The standards and norms that are valued in post-positivist science aim to ensure good scientific practices and valid conclusions through testing the extent to which proposed ideas and theories match observations of reality (Anderson, Ronning, DeVries, & Martinson, 2010; Shadish et al., 2002). For example, multiple raters may serve to increase reliability; using mixed

methods can help to move beyond individual perceptions to demonstrate discriminant and convergent validity (Campbell & Fiske, 1959; Descombe, 2008); and systematic replication by altering operationalizations or methods may yield increasingly robust, consistent findings (Aronson, Ellsworth, Carlsmith, & Gonzales, 1990; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Shadish et al., 2002).

These practices provide the post-positivist with a metric to assess the validity of claims, something that the social constructionist can only measure as agreement or non-agreement with others. Overall then, post-positivists would rebut the social constructionist argument that no scientific pursuit is without constructed standards by arguing that the process of predicting outcomes and observing results across a wide variety of situations over time drives objectivity, accountability, and transferability of knowledge in comparison to philosophy that accepts everything as relative.

Rebuttal #3: The Futility of Utility

The post-positivist acknowledges the pragmatic concerns of social constructionism, but attempts to resolve them by maintaining a pursuit of truth. Specifically, if certain minority voices are underrepresented in empirical research, instead of abandoning truth altogether, a post-positivist solution would be to find empirically, predictable ways to raise awareness by making a proactive effort to be more inclusive of underrepresented voices in research; or perhaps increase societal emphasis and encouragement of minority participation in the sciences; or perhaps expand post-positivist research agendas into areas that are often not represented. Thus, post-positivists might argue that pursuing objective truth from a post-positive philosophy of science may help to resolve some of the concerns with unheard voices in post-positive science. Similarly, post-positivism provides several ways to assess potential biases in the publication and research

process, offering solutions to the concerns raised in ways that do not require the complete abandonment of objective truth (see Fuchs, Jenny, & Fiedler, 2012; Nosek & Bar-Anan, 2012; Nosek & Lakens, 2014).

Overall, the crux of this rebuttal is that potential harmful consequences of post-positivism do not merit the abandonment of the pursuit of objective truth. Rather, adjustments to the post-positivist system can be integrated so as to bring the scientific community closer to this objective truth. By this point, the core differences between post-positivism and social constructionism have been discussed at length. Yet, how do psychologists genuinely practice this philosophy in research pursuits? In the following section, a number of recommendations for doing just that will be discussed.

Walking the Talk: Practical Implications for Psychologists

Unfortunately, many psychologists who adopt a post-positivist perspective have not critically examined the philosophical foundation of their beliefs. That is, they have not carefully evaluated their own biases or the socially constructed values that have been adopted in science. They have not considered the effects of the sub-culture that they inhabit on their perceptions of what is and what is not true. Thus, many post-positivists ironically rely on a consensus theory of truth for their beliefs and the theories to which they ascribe (e.g. because everyone else in the discipline believes it is true) without critically evaluating whether or not those theories are simply socially constructed or rather based on a correspondence theory of truth.

Of course, there may be no way to approach science without the presence of at least some social construction or constructed values. However, self-examination and self-correction is possible so as to prevent “less than objective” from becoming “purely subjective.” Gorsuch (1998) describes this point well when he says, “The purpose of psychological science is to

increase objectivity. This occurs when each psychologist attempts to establish clear decision rules for conclusions before data are collected, and tests theories by those decision rules” (p. 219). As such, several implications are important to consider moving forward. We review four in particular: taking the “post” in post-positivism more seriously; exploring normative rules that govern emergent, dynamic phenomena; publishing each piece of the puzzle; and engaging in philosophical debates about underlying values guiding psychology.

Taking the “Post-” in Post-Positivism More Seriously

Post-positivism holds that all human knowledge is, at best, imperfect, but this sentiment can be taken much more seriously with regard to subjectivity, the influence of the researcher, and the role of common method variance. In regards to *subjectivity*, post-positivist research might become more transparent about subjectivity by drawing on phenomenological methodologies that explicitly acknowledge and manage it. This might entail conversations about the power dynamics in a study, problems/solutions in variable measurement, or adaptations that occur in the study over time (Anastas, 2004; Fuchs et al., 2012; Gioia, Corley, Hamilton, 2012; Gringeri, Barusch, & Cambron, 2013). Furthermore, inductive, qualitative research within a post-positivist framework becomes a powerful way to generate future hypotheses to be explored.

In regards to the *influence of the researcher*, post-positivists can be more aware of their underlying assumptions, values, and perspectives by considering why they are interested in a given research topic as well as the values that they hold during the research process (Myers & Jeeves, 2003). In other fields, scholars are sometimes even asked to go so far as to explicitly call out their perspective at the outset of study (e.g., Croy, 2011). For psychologists, there should at least be some consideration of the relevant demographic characteristics, paradigmatic beliefs, and life events that may have influenced various aspects of the pursuit of truth.

Finally, post-positivists must also be aware of and manage *common method variance*, which occurs when different constructs are assessed using the same method (e.g., a cross-sectional survey), making them no longer orthogonal which can alter the size and direction of an observed effect (Podsakoff et al., 2003). Advanced methods for statistically controlling for this bias may be a significant challenge for scholars given the pressures on academics to successfully publish manuscripts (Alvarez, Bonnet, & Kahn, 2014; Crane & Pearson, 2011; Miller, Taylor, & Bedeian, 2011). Nonetheless, there are thoughtful approaches to mitigating the threat. Specifically, one can use different sources for predictor/outcome variables, separate these variables temporally, or control for common method variance statistically as a latent variable (Podsakoff et al., 2003). In addition to each of these tactics, there is also room for development in the ways that post-positivists conduct research, as will be discussed below.

Exploring Normative Rules that Govern Dynamic, Emergent Phenomena

The adoption of social constructionism can be a reaction against the places where post-positivism currently struggles—in describing and predicting processes in dynamic, complex, interdependent environments where simple cause-effect relationships do not adequately describe the dynamics at play. This might be the case when a relationship between two constructs is affected by a higher level of analysis; when constructs have positive or negative feedback loops that dynamically change over time; or when the observer (e.g., the scientist) is embedded within the system. Relativism within a social constructionist paradigm has often been proposed as the alternative solution, noting that every observation depends on so many factors that every phenomenon should be considered unique and non-generalizable.

Is there another option? Theory and research in post-formal thinking suggests that there is and that the next developmental step may be to look for normative rules that govern dynamic,

interdependent, emergent processes (Basseches, 1984; Kitchener & Brenner, 1990). Four post-formal phenomena are often noted: whole-part relationships, time, dynamic interdependent relationships, and observer-phenomena interactions. Studying these phenomena through a post-positivist lens doesn't lead to relativism, but rather the identification of predictive, normative processes in dynamic, emergent systems. For example, an engineer building a bridge considers how each structural part relates to the whole, how they work together, how key variables can change over time, how they interact with the larger environment, and how the engineer can manage his or her own biases. The engineer does not conclude that there is no correct way to build a bridge because it depends on so many underlying factors, but rather looks for higher order principles and how they interact with one another and change over time.

Forays into the normative rules that govern dynamic systems are emerging. In the arena of part-whole relationships, micro-, macro-, and meso-levels can play out in predictable ways within each level or can combine at lower levels to create emergent processes at higher level processes (Klein & Kozlowski, 2000). Moreover, normative processes have been identified in groups, such as through the ways that minority voices are suppressed and the predictive ways that they can influence the majority (Hogg, 2010). Within organizations, microfoundations (i.e., individual behavioral routines; Teece, 2007) have been found to combine to influence the larger organizational culture. For example, the proactive seeking and management of errors at the individual level (Keith & Frese, 2008) can combine at the organizational level to form adaptive, learning organizations predictive of subsequent organizational performance (Van Dyck, Frese, Baer, & Sonnentag, 2005). Similarly, Walton (2014) notes several psychological interventions that serve as seemingly small catalysts that produce significant long-term behavior change.

Several methods exist to study the patterns of change over time (Ployhart & Vandenberg, 2010) and various patterns of change within large systems (Van de Ven & Sun, 2011). Combined, the impact of these advancements relies on a successful system for publishing and disseminating research, as discussed below.

Publishing Each Piece of the Puzzle

One of the benefits of post-positivism for scientific progress is that its use of standards and criteria for validity allows one to assess the robustness of findings, thereby enabling the creation of self-correcting, working models that are based on a wealth of diverse research. In this way, every scientific finding in a post-positivist research paradigm acts as one piece of the puzzle of reality. However, critical pieces of this puzzle are lost when both null findings and controversial conclusions go unpublished. In regards to *null findings*, academic journals tend to reject research that does not demonstrate a *p* value below the traditional cutoff of .05 (Cortina & Folger, 1998; Nosek & Lakens, 2014; Nosek, Spies, & Motyl, 2012), which bloats collective confidence in claims and prevents an understanding of relationships or differences that are unfounded. To overcome this, researchers can pursue journals that offer provisional acceptance (i.e., acceptance based on design and justification of a study prior to data collection). Some examples of these journals are *Perspectives on Psychological Science* (<http://www.psychologicalscience.org/index.php/replication>) and *The Journal of Business Psychology* (Landis, Cortina, & Rogelberg, n.d.), among others.

In regards to publishing *controversial conclusions*, psychology operates in a world where the majority of studies published confirm the hypotheses (Bones, 2012). In addition to lacking null finding publications, this also suggests a bias in the topics that researchers choose to study. In other words, post-positivist researchers need to seriously reconsider whether or not they are

willing to be wrong in their convictions. That is, they need to be more genuine in considering the extent to which they pursue and publish personally discomfiting research that may not align with their values. In the same vein, one last suggestion for post-positivist researchers pertains to the cultivation and establishment of such values, as discussed below.

Engaging Philosophical Debates about Underlying Values that Guide Psychology

More debate is needed in psychology to examine the values that drive theory, research, and practice. This is a philosophical issue that requires logic and reasoning to resolve. For example, is there a reasoned, logical philosophical foundation for the APA's ethical guidelines, or are they simply socially constructed? If the latter is the case, then recent ethics violations regarding complicit behavior related to torture (Risen & Apuzzo, 2014) cannot be condemned because one can argue that the acts were simply based on alternative and equally valid socially constructed value systems.

To this end, significantly more philosophical and theoretical attention needs to focus on defining "the good society" and how psychology can help build it. Social cognitive theory would suggest that people are self-organizing, proactive, self-reflective, and self-regulatory agentic beings who can picture and move toward a desired future state (Bandura, 1999); that is, the "good society" can be defined and created. Societal good and moral behavior is more than adaptive traits interacting with the environment (Haidt, 2007), but can be created via reason-based, moral guidelines and norms (Bandura, 1999) similar to philosophical work to build a theory of human rights (Sen, 2004).

With respect to values, correspondence theories such as post-positivist empiricism at best describe what is, albeit metaphorically (Haig & Boresboom, 2012; Shadish et al., 2002); however, they provide little guidance to what should be. Coherence theories grounded in

philosophy such as Kant's (1785/1993) Categorical Imperative, Aristotle's Virtue Ethics (Crisp & Slote, 1997), or Talbott's (2005) Moral Discovery offer a pathway for psychology to build logically-derived, consistent philosophical principles that provide prescriptive values for the discipline and its impact on society. The debate about the values that should drive psychology, however, should not simply be relegated to journals devoted to ethics. Rather, the debates should play a central role in a wide variety of psychological journals. Psychology has historically played this role in debates about human society (e.g., James, Freud, Skinner, Rogers, etc.). It is time for the discipline to play a central role again (such as debates about the underlying foundation for corporate social responsibility; Garriga & Melé, 2004).

Conclusion

At the end of the day, so long as psychology hopes to be a legitimate scientific field that provides valuable contributions to society and furthers collective knowledge, theorists, researchers, and practitioners must be set on discovering reality as objectively as the human condition allows. The arguments put forth in this paper are aimed at this end. The intention is not to denigrate the unique perspective and contributions of social constructionism. Rather, the aforementioned arguments reveal a potential cost of the lure of relativism within social constructionism—the abandonment of the pursuit of truth and, consequently, the abandonment of a sustainable psychological science. Therefore, it is the conclusion of this paper that post-positivism is the logically preferable philosophy of science for the future of psychology. Overall, the hope of this paper is for psychology to take the philosophical foundation upon which it rests more seriously, with a specific call to (re)consider the merit of post-positivism as a means for fueling the progress and development of valid, collective knowledge.

References

- Ackerman, J. M., Shapiro, J. R., Neuberg, S. L., Kenrick, D. T., Becker, D. V., Griskevicius, V., Maner, J. K., & Schaller, M. (2006). They all look the same to me (unless they're angry): From out-group homogeneity to out-group heterogeneity. *Psychological Science*, 17, 836-840. doi:10.1111/j.1467-9280.2006.01790.x
- Alevesson, M., & Sköldberg, K. (2010). (Post-)positivism, social constructivism, critical realism: Three reference points in the philosophy of science. In *Reflexive methodology: New vistas for qualitative research* (pp. 15-52). London, UK: SAGE Publications LTD.
- Alvarez, B., Bonnet, J. L., & Kahn, M. (2014). Publish, not perish: Supporting graduate students as aspiring authors. *Journal of Librarianship and Scholarly Communication*, 2, 1-10. doi:10.7710/2162-3309.1141
- Anastas, J. W. (2004). Quality in qualitative evaluation: Issues and possible answers. *Research on Social Work Practice*, 14, 57-65. doi:10.1177/1049731503257870
- Anderson, M. S., Ronning, E. A., DeVries, R., & Martinson, B. C. (2010). Extending the Mertonian norms: Scientist's subscription to norms of research. *Journal of Higher Education*, 81, 366-393.
- Aronson, E., Ellsworth, P., Carlsmith, J. M., & Gonzales, M. (1990). *Methods of research in social psychology* (2nd ed.). New York, NY: McGraw-Hill.
- Bandura, A. (1999). Moral disengagement in the perpetration of inhumanities. *Personality and Social Psychology Review*, 3, 193-209.
- Basseches, M. A. (1984). Dialectical thinking as a metasystemic form of cognitive organization. In M. L. Commons, F. A. Richards, & C. Armon (Eds.), *Beyond formal operations: Late adolescent and adult cognitive development*. New York, NY: Praeger.

- Berezow, A. B. (2012, July 13). Why psychology isn't science. Los Angeles Times. Retrieved from <http://articles.latimes.com/2012/jul/13/news/la-ol-blowback-psychology-science-20120713>
- Bones, A. K. (2012). We knew the future all along: Scientific hypothesizing is much more accurate than other forms of precognition—a satire in one part. *Perspectives on Psychological Science*, 7, 307-309. doi:10.1177/1745691612441216
- Cacioppo, J. T., Semin, G. R., & Berntson, G. G. (2004). Realism, instrumentalism, and scientific symbiosis: Psychological theory as a search for truth and the discovery of solutions. *American Psychologist*, 59, 214-223. doi:10.1037/0003-066X.59.4.214
- Çakir, M. (2012). Epistemological dialogue of validity: Building validity in educational and social research. *Education*, 132, 664-674.
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56, 81-105. doi:10.1037/h0046016
- Cortina, J. M., & Folger, R. G. (1998). When is it acceptable to accept a null hypothesis: No way, Jose? *Organizational Research Methods*, 1, 334-350. doi:10.1177/109442819813004
- Crane, N. J., & Pearson, Z. (2011). Can we get a pub from this? Reflections on competition and the pressure to publish while in graduate school. *The Geographical Bulletin*, 52, 77-80.
- Crano, W. D., & Seyranian, V. (2009). How minorities prevail: The context/comparison-leniency contract model. *Journal of Social Issues*, 35, 335-363. doi:10.1111/j.1540-4560.2009.01603.x
- Crisp, R., & Slote, M. (Eds.). (1997). *Virtue ethics: Oxford readings in philosophy*. New York, NY: Oxford University Press.

- Croy, N. C. (2011). *Prima scriptura: An introduction to New Testament interpretation*. Grand Rapids, MI: Baker Academic.
- Descartes, R. (1983). *Principles of philosophy*. (V. R. Miller & R. P. Miller, Trans.). Boston, MA: Kluwer Boston. (Original work published 1647)
- Descartes, R. (1993). *Meditations on first philosophy: In which the existence of God and the distinction of the soul from the body are demonstrated*. (D. A. Cress, Trans.) Indianapolis, IN: Hackett Publishing Company. (Original work published 1641)
- Descombe, M. (2008). Communities of practice: A research paradigm for the mixed methods approach. *Journal of Mixed Methods Research*, 2, 270-283.
doi:10.1177/1558689808316807
- Eagly, A. H., & Riger, S. (2014). Feminism and psychology: Critiques of methods and epistemology. *American Psychologist*, 69, 685-702. doi:10.1037/a0037372
- Feist, G. J., & Gorman, M. E. (Eds.) (2013). *Handbook of the psychology of science*. New York, NY: Springer Publishing Company.
- Fuchs, H. M., Jenny, M., & Fiedler, S. (2012). Psychologists are open to change, yet wary of rules. *Perspectives on Psychological Science*, 7, 639-642.
doi:10.1177/1745691612459521
- Garriga, E., & Melé, D. (2013). Corporate social responsibility theories: Mapping the territory. *Journal of Business Ethics*, 53, 51-71.
- Gergen, K. J. (1973). Social psychology as history. *Journal of Personality and Social Psychology*, 26, 309-320. doi:10.1037/h0034436
- Gergen, K. J. (2001). Psychological science in a postmodern context. *American Psychologist*, 56, 803-813. doi:10.1037/0003-066X.56.10.803

- Gioia, D. A., Corley, K. G., Hamilton, A. L. (2012). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16, 15-31.
- Gorsuch, R. L. (1988). Psychology of religion. *Annual Review of Psychology*, 39, 201-221.
- Greenwald, A. G. (1975). Consequences of prejudice against the null hypothesis. *Psychological Bulletin*, 82, 1-20. doi:10.1037/h0076157
- Gringeri, C., Barusch, A., & Cambron, A. (2013). Examining foundations of qualitative research: A review of social work dissertations, 2008-2010. *Journal of Social Work Education*, 49, 760-773.
- Guba, E. G., & Lincoln, Y. S. (2005). Paradigmatic controversies, contradictions, and emerging confluence. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (3rd ed., pp. 191-215). Thousand Oaks, CA: Sage Publications, Inc.
- Guo, S. (2015). Shaping social work science: What should quantitative researchers do? *Research on Social Work Practice*, 25, 370-381. doi:10.1177/1049731514527517
- Haidt, J. (2007). The new synthesis in moral psychology. *Science*, 316, 998-1002.
- Haig, B. D., & Borsboom, D. (2012). Truth, science, and psychology. *Theory & Psychology*, 22, 272-289. doi:10.1177/0959354311430442
- Hansen, J. T. (2004). Thoughts on knowing: Epistemic implications of counseling practice. *Journal of Counseling & Development*, 82, 131-138. doi:10.1002/j.1556-6678.2004.tb00294.x
- Hogg, M. A. (2010). Influence and leadership. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology, volume 2* (5th ed., pp. 1166-1207). Hoboken, NJ: John Wiley & Sons, Inc.

- Hunt, S. D. (1994). On the rhetoric of qualitative methods: Toward historically informed argumentation in management inquiry. *Journal of Management Inquiry*, 3, 221-234. doi: 10.1177/105649269433002
- Inglehart, R. (1997). *Modernization and post-modernization: Cultural, economic and political change in 43 societies*. Princeton, NJ: Princeton University Press.
- Joglekar, A. (2013, August 13). Is psychology a “real” science? Does it really matter? [Blog post]. Retrieved from <http://blogs.scientificamerican.com/the-curious-wavefunction/is-psychology-a-e2809create2809d-science-does-it-really-matter/>
- John, L. K., Loewenstein, G., & Prelec, D. (2012). Measuring the prevalence of questionable research practices with incentives for truth telling. *Psychological Science*, 23, 524-532. doi:10.1177/0956797611430953
- Jost, J. T., & Kruglanski, A. W. (2002). The estrangement of social constructionism and experimental social psychology: History of the rift and prospects for reconciliation. *Personality and Social Psychology Review*, 6, 168-187.
- Kant, I. (1993). *Grounding for the metaphysics of morals: With on a supposed right to lie because of philanthropic concerns*. (J. W. Ellington, Trans.). Indianapolis, IN: Hackett Publishing Company. (Original work published 1785)
- Keith, N., & Frese, M. (2008). Effectiveness of error management training: a meta-analysis. *Journal of Applied Psychology*, 93, 59-69. doi:10.1037/0021-9010.93.1.59
- Kitchener, K. S., & Brenner, H. G. (1990). Wisdom and reflective judgment: Knowing in the face of uncertainty. In R.J. Sternberg (Ed.), *Wisdom: Its nature, origins, and development* (pp. 212-229). New York, NY: Cambridge University Press.

- Klein, K. J., & Kozlowski, S. W. (2000). From micro to meso: Critical steps in conceptualizing and conducting multilevel research. *Organizational Research Methods*, 3, 211-236.
- Kuhn, T. S. (1970). *The structure of scientific revolutions* (2nd ed.). Chicago, IL: The University of Chicago Press.
- Landis, R. S., Cortina, J. M., & Rogelberg, S. G. (n.d). Retrieved from http://www.springer.com/cda/content/document/cda_downloaddocument/JBP+RR+Special+Issue+May+5RL.pdf?SGWID=0-0-45-1458040-p35536793
- Locke, E. A. (2002). The dead end of postmodernism. *American Psychologist*, 56, 458. doi:10.1037/0003-066X.57.6-7.458a
- Meyers, R. G. (1975). Truth and theory in philosophy: A post-positivist view. *Philosophica*, 15, 21-38.
- Miller, A. N., Taylor, S. G., & Bedeian, A. G. (2011). Publish or perish: Academic life as management faculty live it. *Career Development International*, 16, 422-445.
- Myers, D., & Jeeves, M. A. (2003). *Psychology: Through the eyes of faith*. San Francisco, CA: Harper Collins.
- Neuliep, J. W., & Crandall, R. (1990) Editorial bias against replication research. *Journal of Social Behavior and Personality*, 5, 85-90.
- Neuliep, J. W., & Crandall, R. (1993) Reviewer bias against replication research. *Journal of Social Behavior and Personality*, 8, 21-29.
- Nosek, B. A., & Bar-Anan, Y. (2012) Scientific utopia: I. Opening scientific communication. *Psychological Inquiry*, 23, 217-243. doi:10.1080/1047840X.2012.692215
- Nosek, B. A., & Lakens, D. (2014). A method to increase the credibility of published results. *Social Psychology*, 45, 137-141. doi:10.1027/1864-9335/a000192

- Nosek, B. A., Spies, J. R., & Motyl, M. (2012). Scientific utopia: II. Restructuring incentives and practices to promote truth over publishability. *Perspectives on Psychological Science*, 7, 615-631.
- Ostrom, T. M., & Sedikides, C. (1992). Out-group homogeneity effects in natural and minimal groups. *Psychological Bulletin*, 112, 536-552. doi:10.1177/1745691612459058
- Pilgrim, D. (2013). In defense of inclusive realism in psychology. *The Psychologist*, 26, 156-159.
- Ployhart, R. E., & Vandenberg, R. J. (2010). Longitudinal research: The theory, design, and analysis of change. *Journal of Management*, 36, 94-120. doi:10.1177/0149206309352110
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88, 879-903. doi:10.1037/0021-9010.88.5.879
- Ponterotto, J. G. (2005). Qualitative research in counseling psychology: A primer on research paradigms and philosophy of science. *Journal of Counseling Psychology*, 52, 126-136. doi:10.1037/0022-0167.52.2.126
- Popper, K. (1959). *The logic of scientific discovery*. New York, NY: Basic Books, Inc.
- Pronin, E., Gilovich, T., & Ross, L. (2004). Objectivity in the eye of the beholder: Divergent perceptions of bias in self versus others. *Psychological Review*, 111, 781-799. doi:10.1037/0033-295X.111.3.781
- Risen, J., & Apuzzo, M. (2014, December 14). C.I.A., on path to torture, chose haste over analysis. *New York Times*. Retrieved from <http://www.nytimes.com/2014/12/16/us/politics/cia-on-path-to-torture-chose-haste-over-analysis-.html>

- Robins, R. W., Spranca, M. D., & Mendelsohn, G. A. (1996). The actor-observer effect revisited: Effects of individual differences and repeated social interactions on actor and observer attributions. *Journal of Personality and Social Psychology*, 71, 375-389.
- Schmitt, F. F. (1995). *Truth: A primer*. Boulder, CO: Westview Press.
- Schwandt, T. A. (2000). Three epistemological stances for qualitative inquiry: Interpretivism, hermeneutics, and social constructionism. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 189-213). Thousand Oaks, CA: Sage Publications, Inc.
- Sen, A. (2004). Elements of a theory of human rights. *Philosophy & Public Affairs*, 32, 315-356.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston, MA: Houghton-Mifflin.
- Sokal, A., & Bricmont, J. (1999). *Fashionable nonsense: Postmodern intellectuals' abuse of science*. New York, NY: Picador USA.
- Stroebe, W., Postmes, T., & Spears, R. (2012). Scientific misconduct and the myth of self-correction in science. *Perspectives on Psychological Science*, 7, 670-688.
doi:10.1177/1745691612460687
- Talbott, W. J. (2005). *What rights should be universal?* Oxford, UK: Oxford University Press.
- Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28, 1319-1350.
- Van de Ven, A. H., & Sun, K. (2011). Breakdowns in implementing models of organization change. *The Academy of Management Perspectives*, 25(3), 58-74.
doi:10.5465/AMP.2011.63886530

Van Dyck, C., Frese, M., Baer, M., & Sonnentag, S. (2005). Organizational error management culture and its impact on performance: a two-study replication. *Journal of Applied*

Psychology, 90, 1228-1240. doi:10.1037/0021-9010.90.6.1228

Walton, G. M. (2014). The new science of wise psychological interventions. *Current Directions in Psychological Science*, 23, 73-82. doi:10.1177/0963721413512856