Comments on Howe

Toward a More Inclusive “Scientific Research in Education”

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In response to Howe (2009), the author argues that educational research needs multiple thoughtful perspectives. The author's standpoint is that of a mixed methods research methodologist. Mixed methods research provides an antidualistic and syncretic philosophy and set of approaches or possibilities for merging insights from diverse perspectives; its working goal is to provide pragmatic, ethical solutions to local and societal problems. To achieve this goal, researchers should cease writing articles that construct straw figures (based on old literature), knock them down, and claim Truth. The author of the present article provides a new set of guidelines for an education science that includes a respectful and important place for all. The author also provides a working value theory that resolves some objectivist and subjectivist differences.

Keywords: education science; mixed methods research; positivism

Howe argues that there are “three positivist dogmas.” The first is the “qualitative–quantitative dogma,” which states that qualitative and quantitative research are incompatible and can only be combined disjunctively or as separate entities. Howe sees this dogma as a result of positivism. The second is the “fact–value dogma,” which states that facts and values must remain separate in research. Howe sees this dogma as a result of positivism. The third is the “empirical science–humanities dogma,” which sees the academy as split between science-oriented researchers and humanities-oriented researchers and their associated cultures and practices. Howe sees the third dogma, like the first two, as a “positivist throwback.” He presents the dogmas as representative of current education science and as detrimental to the development of further knowledge in education. He goes on to claim that positivism has been discredited and that the authors of documents such as the National Research Council’s (NRC; 2002) Scientific Research in Education (henceforth, SRE), the NRC’s (2004) Advancing Scientific Research in Education, and AERA’s (2006) Standards for Reporting on Empirical Social Science Research in AERA Publications are positivists (especially of the logical positivism variety). Howe is especially focused on critiquing SRE. From my standpoint, there are strengths and weaknesses in Howe’s arguments about positivism and his dogmas.

One weakness in Howe’s arguments is that his qualitative–quantitative dogma (which has been discussed in many pages of Educational Researcher over the past 25 years) should have included his other two dogmas. Howe’s fact–value dogma has long been at the core of the difference between the quantitative and qualitative camps of writers. Qualitative research tends to view facts and values as rightfully entangled, and quantitative

Howe’s Three Dogmas and Claims of Positivism

In addition to commenting on Howe’s article, I will attempt to provide a centrist (i.e., mixed methods research) vision for the discipline of educational research, suggesting how we might construct a more inclusive educational research enterprise. Howe’s philosophical standpoint is a thoughtful and important one that needs to be carefully considered. However, competing standpoints also need consideration, and I will offer an alternative.
research prefers to emphasize separation of facts and values in the name of objectivity. Howe's empirical science–humanities dogma also is at the core of the qualitative-versus-quantitative research debates. Quantitative researchers tend to be more aligned with empirical and natural sciences, and qualitative researchers tend to be more heavily influenced by ideas found in the humanities. Most books and articles explaining qualitative and quantitative research treat them as full philosophical/methodological systems that include holistic webs of belief regarding ontology, epistemology, values, methods, and many other issues. In short, Howe's qualitative–quantitative dogma is, or should have been, about facts–values, empirical science–humanities, and much more.

No one has a conceptual system in our discipline that “cuts nature at its joints” in a Platonic sense; hence Howe's tripartite conceptual system might work, but it seems more appropriate to conceptualize the debate around the standard qualitative-versus-qualitative research literature. Qualitative and quantitative research are full systems of philosophical and methodological beliefs and practices, and they include not just Howe's three issues but much more. For me, Howe's three dogmas appear arbitrary because they are not at all exhaustive of the many important differences among today's three major research communities (e.g., qualitative, quantitative, and mixed methods research). Howe heavily relies on the term positivism and attacks it throughout the article. Unfortunately, referring to scholars as positivists in the 21st century amounts to a form of “straw person” argumentation. The Oxford Dictionary of Sociology (Scott & Marshall, 2009) puts it well when it states that positivism is “a term that, through overuse and misuse, has become an almost meaningless term of abuse.” Howe locates positivism mostly in logical positivism, which, in its strong form, has long departed from the landscape of philosophy and empirical research. Howe notes its exit from philosophy but still sees it as widespread in what he calls “education science.” Virtually no quantitative research methodologists currently use the term positivist to refer to their work (and they have not for quite a long time), and none rely primarily on the writings of the logical positivists. Some writers seem reluctant to give up the term positivism, perhaps because it is an easy target.2

Educational researchers should not refer to today's (21st-century) quantitative researchers as positivists; if it is believed that a philosophical label is necessary, then postpositivist is a kinder and gentler term. Use of the term postpositivism, rather than positivism, shows that a researcher is more cognizant of changes that have occurred over the past 75 years in the philosophy of social science and research methodology. Phillips and Burbules (2000) provide an outstanding summary of this current philosophy of science that generally fits today's quantitative educational research community. Although it is true that postpositivism has much in common with positivism, to disregard progress in philosophical thinking is unwarranted. We need to open up lines of communication between different researchers and communities of researchers, and calling quantitative researchers “positivists” is an effective way to shut down rather than open thoughtful communication. If Howe's arguments had been targeted at a philosophy that currently exists in mainstream quantitative research (postpositivism), his article would have made a better contribution to the current literature.

Here is a summary (quoted from Johnson & Onwuegbuzie, 2004) of a set of philosophical positions on which many of today's qualitative (e.g., constructivists) and quantitative (e.g., postpositivists) methodologists are in agreement:

Fortunately, many (or most?) qualitative researchers and quantitative researchers (i.e., postpositivists) have now reached basic agreement on several points of earlier philosophical disagreement (e.g., Phillips & Burbules, 2000; Reichardt & Cook, 1979; Reichardt & Rallis, 1994). Basic agreement has been reached on each of the following issues: (a) the relativity of the “light of reason” (i.e., what appears reasonable can vary across persons); (b) theory-laden perception or the theory-ladenness of facts (i.e., what we notice and observe is affected by our background knowledge, theories, and experiences; in short, observation is not a perfect and direct window into “reality”); (c) underdetermination of theory by evidence (i.e., it is possible for more than one theory to fit a single set of empirical data); (d) the Duhem-Quine thesis or idea of auxiliary assumptions (i.e., a hypothesis cannot be fully tested in isolation because to make the test we also must make various assumptions; the hypothesis is embedded in a holistic network of beliefs; and alternative explanations will continue to exist); (e) the problem of induction (i.e., the recognition that we only obtain probabilistic evidence, not final proof in empirical research; in short, we agree that the future may not resemble the past); (f) the social nature of the research enterprise (i.e., researchers are embedded in communities and they clearly have and are affected by their attitudes, values, and beliefs); and (g) the value-ladenness of inquiry (this is similar to the last point but specifically points out that human beings can never be completely value free, and that values affect what we choose to investigate, what we see, and how we interpret what we see). (p. 16)

Preliminary empirical evidence suggests that many practicing researchers hold moderate positions on many philosophical and methodological issues that have been used to contrast qualitative and quantitative research. One of my doctoral students recently collected data using a revised version of a philosophical and methodological beliefs instrument developed in 2004 (Johnson, Meeker, Loomis, & Onwuegbuzie, 2004). The doctoral student collected data from 152 faculty members in instructional design and related fields. Participants indicated whether they identified most closely with qualitative, quantitative, or mixed methods research. Although the three groups' positions usually fell in the expected directions, the differences were relatively small, and most held non-extreme views (i.e., they held moderate or mixed views) on philosophical and methodological issues. The largest differences between qualitative and quantitative researchers were found on physicalism (quantitative researchers scoring higher), idealism (qualitative scoring higher), ontological relativism (qualitative scoring higher), epistemological objectivity (quantitative scoring higher), ethical realism (qualitative scoring higher), value neutrality (quantitative scoring higher), nomothetic methods (quantitative scoring higher), and ideographic methods (qualitative scoring higher). We found either no differences or smaller differences on ontological realism, epistemological relativism, fallibilism, rationalism, empiricism, ethical relativism, critical methods, and humanism.

The above philosophical issues, and more, have been at the core of the qualitative-versus-quantitative research debates that have bifurcated educational research. Given the progress toward more complex understanding of philosophical issues among most
methodological groups, and given the empirical data suggesting moderate views by practicing researchers, I wonder why we keep debating these same issues in their older, simplistic forms. Writers on philosophical issues too often rely on old versions of issues and adopt an either/or logic, which is a false choice that assumes there are only two possibilities on the issues and that suggests people must be either fully on one pole or fully on the other pole. Mixed methods researchers generally reject either/or logic (such as qualitative or quantitative beliefs in toto) and advocate thinking in terms of continua on multiple philosophical and methodological dimensions. Mixed methods researchers recommend forming complex constructions of webs of belief that work best (for valued outcomes) in particular situations and domains of research practice.

For several reasons, I disagree with Howe's argument that SRE adheres to positivism and its verification theory of meaning (i.e., the view that the only meaningful statements—other than analytic ones such as in mathematics—are statements that can be empirically verified through experience, and all other statements, such as statements about values, are cognitive nonsense). First, I found nothing in SRE about a tripartite division of statements into analytic and synthetic, which are meaningful, versus everything else, which is cognitive nonsense (i.e., verification theory of meaning). Second, the SRE authors are well aware that strong verification is not possible (i.e., the drawing of conclusions of universal or certain truth) because of the problem of induction and other logical problems. Third, the SRE authors clearly state that only probabilistic claims can be made.

For the early logical positivists, if a scientific hypothesis (a universal claim or prediction based on a universal law) was supported, then it was considered true. But the logical positivists came to realize that such claims were unfounded because the claims were based on the logical fallacy of affirming the consequent (i.e., if p then q; q; therefore p). Some logical positivists tried to remedy this problem by softening the certainty entailed in verificationism by replacing it with confirmability. Popper, who was not a logical positivist, tried to remedy the problem of verification by rejecting verificationism and its inductive logic and fully relying on falsificationism, which uses the deductively valid argument form of *modus tollens* (i.e., if p then q; not q; therefore not p).

In the philosophy of science, it is generally accepted that Popper's solution to the problem of verificationism also is unsatisfactory because, ultimately, scientists want to know which theories are true, not just which theories are false. Popper's deductive solution also failed in light of the Duhem-Quine thesis (i.e., holism), which states that no hypothesis can be tested in isolation; one cannot claim that lack of empirical support of a single hypothesis necessarily means that the hypothesis is false, because the source of the problem could be with a background or auxiliary assumption rather than with the hypothesis as stated. The problem of "accepting the null hypothesis" (making a null claim) in inferential statistics is widely known in quantitative research methodology in the social sciences. The authors of SRE attempt to solve the problem of verification and the problem of falsification by relying on the inductive (and reasonable) strategies of replication and drawing of probabilistic claims for generalizations.

As further evidence that it is not a fully positivist document, SRE gives no attention at all to many key components of positivism. For example, it gives no attention to the rational reconstruction of theories in the language of logic; it makes no mention of unifying the sciences into one science (e.g., physics); it makes no strict distinction between theory statements and observation statements and does not attempt to link them by means of bridge principles; it does not assert the cognitive meaningfulness versus nonsense of propositions as a demarcation of science; and it makes no mention of synthetic or analytic statements. This list can be expanded. Furthermore, SRE is in direct conflict with several of the following positions held by "positivists," according to Hacking (1983), one of the philosophers Howe references as an authority. Hacking observes that positivism (taken as a combination of classical and logical positivism) (1) emphasizes verification, (2) is pro-observation, (3) is anti-cause, (4) downplays explanations, and (5) is anti-theoretical entities (pp. 41–44). Hacking adds that "positivists sum up items (1) through (5) by being *against metaphysics*" (p. 42). Hacking and many others point out that positivists are antirealists. I would agree that SRE is strong on Position 2 and relatively strong on Position 1. However, SRE contrasts sharply with Positions 3, 4, and 5. Again, my argument is simply that Howe's attempt to *equate* SRE with positivism fails. For example, rather than being realists, positivists typically are classified as following phenomenalism (Phillips & Burbules, 2000). That is, positivists generally held that science should accept the reality only of the world that we can experience; they held that we cannot study the world as it really is. In contrast, a sizable percentage of today's postpositivists appear to follow scientific realism rather than phenomenalism.

Howe addresses the Quine-Duhem thesis (I prefer to call it the Duhem-Quine thesis to reflect the authors' time ordering). As shown in my earlier quotation of a 2004 article that I coauthored with Anthony J. Onwuegbuzie, I fully agree with Howe that the issue of holism is important, and I hope that most researchers and methodologists are aware of its existence and importance. In agreement with Howe, I believe holism should have been explicitly considered in SRE. Hypothesis and theory testing are far more difficult than suggested by SRE, which suggests that a hypothesis can be "verified or falsified." In defense of SRE, one might argue that holism in hypothesis and theory testing is partially implicit in SRE's emphasis on replication and consideration of research findings taken as a whole. It also is facilitated through the operation of an open and disputatious research community, which SRE appropriately emphasizes.

I agree with Howe that many pragmatists get the working logic "right" by assigning justification to research claims and hypotheses in direct proportion to the evidence that they work in practice and on the basis of epistemological criteria such as predictive and explanatory success and ability to produce positive change and adjustment in people in their psychological and social contexts. Perhaps the SRE authors deserve more credit than Howe and I assign because in many places they claim that the primary epistemological goal in education research is to make "warranted assertions" (à la Dewey), which is exactly what we, and many other practicing researchers, agree should be a key goal of our activities.
Next, I have a few additional comments on Howe’s fact–value dogma. I have already noted that this antinomy is one of the key issues dividing qualitative and quantitative research. Howe claims the fact–value dogma is a positivist throwback, but it goes back much farther than positivism. Although ancients such as Socrates and Plato sometimes argued that value issues could be solved through rational argument (which connected facts and values), values worked their way out of natural philosophy (i.e., “science”) over the centuries, and the separation crystallized in the writings of David Hume (1711–1776). The fact–value distinction is sometimes called “Hume’s law,” which states that it is logically impossible to derive an “ought” from an “is.” In other words, facts cannot imply values. It certainly is true, however, that the separation of fact from value was a strongly held position of the positivists.

Howe makes some important points about the divisive facts–values issue. I agree with Howe and Putnam (whom Howe cites in several places) that facts and values are entangled and that researchers should more explicitly recognize and emphasize this situation. Howe discusses “two-edged concepts,” which Putnam and other philosophers call thick concepts. Thick concepts naturally conflate the descriptive and the normative, or facts and values. The point is that many prima facie descriptive concepts studied by social researchers have a value component. Howe focuses on the example of achievement. Other examples are opportunity, satisfaction, cruelty, curiosity, intelligence, self-esteem, and perhaps most constructs of interest to educational researchers. A few relatively thick epistemological terms are knowledge, evidence, justification, warrant, quality, importance, trust, curiosity, meaningfulness, fruitfulness, good theory, best explanation, and research problem. In anthropology and sociology, culture and socioeconomic class are prominent intersubjective objects with strong value components. In psychology, attitudes are traditionally viewed as including an evaluative component (Eagly & Chaiken, 1993). Messick (1995) argues convincingly that one of the most central concepts in quantitative research—measurement validity—includes values. He writes, for example, that “validity is broadly defined as nothing less than an evaluative [italics added] summary of both the evidence for and the actual—as well as potential—consequences of score interpretation and use (i.e., construct validity conceived comprehensively)” (p. 742). My point is that many objects of study, and the ways that we study them in educational research, have embedded value components that are not readily separable from their factual components.

Many of our objects and concepts of study in educational research also have intentional/agentic/volitional (free will) and chance (fortuity) components despite attempts by traditional scientific research to ignore these elements because they might be subjective, idiosyncratic, and less predictable than other components. Fortunately, in some pockets of research these factors are recognized and studied. For example, Bandura (2006) has done significant research on both intentions and chance events in human lives. There are multiple ontological components of the objects of study in the social sciences (e.g., values, free will, chance, emotions, rationality) that make it difficult to explain large amounts of variance in many outcome variables. Difficulties also arise in the application of clinical and educational findings to specific individuals and to particular schools and classrooms. Integration of existing methods through mixed methods research, together with a new generation of methods, will probably be required if researchers are to interact more successfully with these kinds of local, historical, dynamic complexities.

I agree with Howe that SRE should have more explicitly acknowledged and discussed the entanglement of facts and values. The politics surrounding the commissioning and publishing of SRE likely made admission of complexities in social scientific research more difficult. Howe correctly emphasizes that epistemology (e.g., including “scientific” epistemology) is value-laden (telling researchers how they should obtain, select, secure, and judge knowledge). Raw data, especially social science data, cannot be interpreted in the absence of values. Human beings cannot fully reason on or about “facts” without concurrently reasoning and relying on values. Evidence is not purely descriptive. Fortunately, it does not follow that researchers must fall into the grips of a full-blown solipsism of the moment or a radical relativism of judgment wherein any claim is as good as any other. It does mean, however, that we should more explicitly recognize our value concerns and find a reasonable value theory to aid us in selecting questions, interpreting results, and making research-based recommendations.

I also agree with Howe that we should more frequently acknowledge the sociopolitical background conditions that our research often does not challenge. Many educational researchers are dissatisfied with the status quo, but they ignore it in their research. In contrast, sociologists and critical theorists routinely examine and challenge background conditions and make them a focus of their research. The SRE guiding principles sound somewhat technocratic, as Howe suggests. Although technocratic science has useful elements, such as helping us to answer a number of research questions and solve certain technological problems, it comes with costs, among them the exclusion from “education science” of the outstanding work of many educational researchers who do not fit the SRE demarcation.

A more inclusive education science would incorporate researchers in all the subdisciplines who desire to contribute to education science, broadly conceived as education knowledge. On the one hand, AERA has done a good job of partially addressing this inclusion concern by producing an additional set of standards for humanities-oriented research (AERA, 2009; published in this issue of Educational Researcher, pp. 481–486). On the other hand, AERA has recently put a “definition of scientifically based research” on its public website that is unlikely to be fully satisfactory to many of its members (see http://www.aera.net/opportunities/?id=6790). I encourage readers to compare this public definition and list of principles with the guidelines for an inclusive education science that I propose later in this article. My guidelines were constructed to include “empirical science” research, “humanities-oriented” research, and philosophical research.

With his discussion of the empirical science–humanities dogma, Howe appropriately points out a division that has long existed in the academy and notes that it was nicely articulated in the 1950s by Charles Percy Snow. Snow was a physicist and a novelist who thought that he could bridge the schism between the scientific and humanities research communities. Although Howe treats this schism as a positivist throwback, it can be traced to ancient times. For example, the Sophists Protagoras and
Gorgias and the historian Herodotus can be viewed as proto-
qualitative thinkers, and Socrates and Plato, as well as the natural-
science-oriented pre-Socratics, can be viewed as proto-quantitative
thinkers (Johnson & Gray, in press; Teddle & Johnson, 2009a).
In short, the conflict between these two views of human beings
and their condition appears throughout recorded history. Critchley (2001)
provides a convincing case that the division in
the academy during the past century reflects a historical divide
between Continental and Anglo-American philosophy; he
believes the disagreement is partially about the relative importance of
wisdom (qualitative knowledge) and science (quantitative knowl-
edge). Mixed methods researchers argue that both qualitative
(humanistic, poetic, wisdom-oriented, freedom-oriented, pas-
ionate) and quantitative (traditional scientific, objectivist) view-
points are essential to human well-being and specifically to the
advancement of education.

Howe’s Critique of SRE’s Definition of Education
Science and Its Guiding Principles

In the section of his article titled “The New Orthodoxy and the
Rhetoric of Science,” Howe contends that a new orthodoxy and its
technocratic view of science is what SRE (along with NRC, 2004,
and AERA, 2006) have provided. He argues that the authors of
descriptions have defined science in an essentialist (specifically,
Platonic) manner, and he criticizes that approach. Although inter-
esting, Howe’s argument about essentialism ultimately fails. I found
no essentialist definition of science or education science in SRE.

According to essentialism in its Platonic version, the essence
of an idea or object (e.g., truth, justice, intelligence, a triangle, a
house, education science) rests in a “form” that is eternal and
unchanging. What science is today is the same as it was 2,500
years ago, and it will be the same 2,500 years into the future. In
a more contemporary version, an essentialist definition provides
the properties that are necessary (in all possible worlds and
jointly sufficient to define a concept or thing. In contrast to both
of these versions of essentialism, SRE takes a pragmatist approach
to defining science, as indicated in the following quotation:
“Throughout the report, we argue that science is competent
inquiry that produces warranted assertions (Dewey, 1938)”
(p. 54). SRE also states, “Science is a communal ‘form of life’ (to
use the expression of the philosopher Ludwig Wittgenstein
[1968]), and the norms of the community take time to learn”
(p. 53). The SRE authors recognize that science includes many
conventions. They state that education science is not conducted
“by the mechanistic application of a particular method” (p. 2)
and that the guiding principles “are not a rigid set of standards for
conducting and evaluating individual studies” (p. 2). The authors
explicitly state that “the history of scientific inquiry attests to the
fact there is no one method or process that unambiguously defines science” (p. 24). Again, perhaps the SRE definition
is closer than Howe thinks to the pragmatic definition that he
prefers.

From my standpoint, SRE reflects a group effort (albeit by a
group whose members had unequal power over the final guiding
principles) describing what education science should be like, not
what science is necessarily. SRE provides the vision of one set
of authors. Howe points out that several prominent qualitative-
and philosophy-oriented authors who helped write the SRE
guidelines (Robert DeHaan, Margaret Eisenhart, and Denis
Phillips) believed that SRE incorporated many compromises and
improvements over traditional presentations of education sci-
ence. Although the outcome (especially as seen in the guiding
principles) falls far short of an inclusive view of education sci-
ce, I agree with DeHaan, Eisenhart, and Phillips that SRE and
other related documents include many moderations and insights
from current philosophies and theories of social science.

Consensus in academic philosophy of science today seems to
indicate that there is no essential definition of science and no
unproblematic criterion of demarcation, and the SRE authors
were careful not to state otherwise. The definitional approach
used in SRE seems to rely more on family resemblance and prag-
matic and conventionalist approaches than on delineating a set
of essentialist properties. The SRE presentation is one of many pos-
sible social constructions of education science. Although SRE
came up short in providing an inclusive set of guidelines, I
applaud the authors for working together and making compro-
mises in what likely was a highly politicized context.

Another key part of Howe’s article is his critique of the SRE’s
six “guiding principles.” Here are the guiding principles provided
in SRE (p. 52):

- Pose significant questions that can be investigated empirically.
- Link research to relevant theory.
- Use methods that permit direct investigation of the question.
- Provide a coherent and explicit chain of reasoning.
- Replicate and generalize across studies.
- Disclose research to encourage professional scrutiny and
critique.

Howe made a slight error of presentation when he quoted
these principles. He numbered them, which suggests a sequence;
however, the authors of SRE excluded numbers and specifically
stated, “Although there is no universally accepted description of
the elements of scientific inquiry, we have found it convenient to
describe the scientific processes in terms of six interrelated, but not
necessarily ordered [italics added], principles of inquiry” (p. 52).
Their footnote 1 on the same page further stated, “For example,
inductive, deductive, and abductive modes of scientific inquiry
meet these principles in different sequences.”

Howe provides an interesting critique of the guiding prin-
ciples. He notes that the first principle (if viewed as a demarcation
of science) excludes nonempirical activity as outside the realm of
science. He also notes that philosophy appears to be explicitly
excluded from “science” in an SRE footnote. He points out that
SRE seems to rely, fully, on a regularity view of causation. I would
add that full reliance on the traditional regularity view omits
what mixed methods researchers would view as complementary
approaches to causation, such as intentional causation, an instru-
mental/pragmatic view of causation, explanatory causation, and
complexity realism (House, 1991; Maxwell, 2004). The mixed
methods research perspective on causation is that multiple
approaches to addressing causation should be considered concur-
rently and often integrated.

Howe’s points are important, but if the goal is a critique of
SRE, several additional areas warrant attention. First, SRE should
include more explicit recognition of multiple logics (e.g., deduc-
tive, inductive, abductive, critical). Second, SRE only minimally
ments the creative and constructive aspects of science, and the guidelines give minimal attention to (and show little appreciation of) “logics” and contexts of discovery. Science is just as much about generating, constructing, and discovering knowledge as it is about testing knowledge claims, and it needs *both* kinds of activity. Third, the guidelines provide little room for strategies and insights gained through alternative epistemologies commonly relied upon in educational research. Fourth, *SRE* appears to claim that there are no significant differences between the natural sciences (e.g., physics, chemistry) and the social sciences (e.g., sociology, psychology, education): “At its core, scientific inquiry is the same in all fields” (p. 2). Fifth, *SRE* pays insufficient attention to the *integration* of different perspectives, methods, and philosophies in educational research.

**A Reconstruction and New Set of Guiding Principles**

It is relatively easy to criticize and deconstruct, and thus far I have done my share of criticizing/deconstructing several of Howe’s claims, and at times I have teamed with Howe in criticizing/deconstructing *SRE*. From my standpoint, criticism/ deconstruction by itself is usually insufficient; it does little good to tear something down unless one *also* offers an alternative (a positive vision) for the reader to consider. Therefore, in this last section I offer some additional suggested solutions for the qualitative-versus-quantitative schism in education.

Some writers pose the qualitative-quantitative schism as an unbridgeable ontological gap (this problem is at the core of Howe’s excellent 1988 critique of the “incompatibility thesis”). Other writers reject the incompatibility thesis (in its *strong* form) and argue that researchers, practitioners, and scholars in different research domains should more fully accept that there is room for all of these types of research, that all have some importance for education as a whole, that no single individual or theory or paradigm has the single Truth or reality or “one way” for producing knowledge, and that, sometimes, these different types of knowledge can be pragmatically and effectively combined or integrated into complementary wholes (Greene, 2007; Johnson, 2008a).

Quine (1948) effectively expressed the *inclusive ontology* advocated here when he wrote the following:

>A curious thing about the ontological problem is its simplicity. It can be put in three Anglo-Saxon monosyllables: “What is there?” It can be answered, moreover, in a word—Everything. (p. 21)

There are many important types of reality (e.g., subjective, intersubjective, and objective/material) and there are many forms of knowledge, and we should attempt to (a) be more tolerant of different worldviews and (b) refrain from writing as if our way of viewing reality and knowledge were the only ("one") way (Johnson, 2008b). Many true statements can be made about an object of study, and viewing objects in multiple ways often leads to new insights that would have been missed if only one approach or viewpoint had been used. Likewise, useful integration can be obtained from dialectical listening to qualitative and quantitative positions and merging of the positions into a third syncretic position (Greene, 2007; Onwuegbuzie & Johnson, 2006). The methodological paradigm known as mixed methods research is built on these kinds of insights.

In addition to examining and broadening our view of reality, we as researchers should more explicitly examine our value theory. I recommend a value theory based on the idea that (a) educational research has one general, broad set of values or standards held in common, and (b) at the same time, different communities of research and practice also have different, more specific sets of values or standards based on their more particular standpoints and needs. In short, we can be different and have something in common. For example, some common standards for *education science* should be honesty, openness to critique, and ethical behavior. Another common standard should be contribution (even if only indirect) to social betterment, social justice, and advancement of knowledge. Patton (2002) nicely summarizes some research community-specific sets of standards: (a) traditional scientific research standards, (b) social construction and constructivist standards, (c) artistic and evocative standards, (d) critical change standards, and (e) evaluation standards. Patton also provides multiple criteria for each of these sets.

Another component of the potentially useful value theory for education science proposed here is found in the discipline of program evaluation. What I provide is a slight modification of the popular “evaluation logic,” attributed to Michael Scriven (Fournier, 1995), for making judgments about evaluands:8 (1) identify and establish criteria of merit, worth, and value for your research (i.e., what process and outcomes will be valued as good by you and your stakeholders, and what epistemic values will you use to justify your research?); (2) construct and set standards on the criteria that you will follow when judging the evaluand (these standards can be absolute or comparative); (3) gather evidence or data pertaining to the evaluand’s performance on the criteria (note that this adds some “objectivity” to the process); (4) synthesize the data and results into value judgments. This value theory integrates facts and values. According to the value theory proposed here, the statements produced in Step 1 should be based on the common set of values listed earlier and it should include a well-defined and defended set of research/stakeholder/participant community-specific values. If we will carefully examine and explicitly state our value positions, we can “rationally”—or as Dewey would say, “intelligently”—judge our research and practice.9

Although Howe provided some useful critique of *SRE*’s guiding principles, he failed to offer an alternative. Therefore, I propose a set of guidelines that is more inclusive and might better represent research in education. These guidelines are for the reader’s consideration in the science debates:

- Identify important problems and pose questions that can be investigated empirically or through other potentially useful approaches.
- Continually generate, discover, describe, and construct new knowledge, and test/evaluate knowledge claims.
- Separately and interconnectively explore, reflect upon, describe, predict, and explain the natural world and meaningful social and personal worlds and experiences.
- Explicate researcher and research values, purposes, commitments, and key background assumptions.
- Use methods and strategies that, separately or in combination, can produce warranted investigation of particular research questions.
- Rely on multiple sources of evidence.
• Link explanatory research to relevant theory through theory generation, theory testing, and ongoing theory modification.
• Describe the nomological (i.e., general, law-like) knowledge domain, but also describe ideographic, local, and contextual knowledge domains, and interconnect these to continually produce meaningful “practical theory.”
• Replicate, document mediating and moderating processes, delineate conditions of generalization, and identify broad generalizations when possible, but also identify complex contextual interactions to aid in particular understanding and practical application of education/social theory.
• Articulate, explicate, develop, and test “manualized models,” practice-based models, middle-level theoretical models, meta-models (i.e., models of models), and transtheoretical and transdisciplinary models of educational phenomena, and interconnect these continually for scientific learning.
• Explicate creative and formal reasoning processes (e.g., deductive, inductive, abductive, critical-theory) to help articulate and warrant findings and value choices.
• Fully disclose research processes and findings to encourage professional and societal scrutiny.
• Continually encourage self-examination and critique and ongoing improvement of the education scientific enterprise.

Howe’s vision for the future is to replace “education science” with “rhetoric of science.” He wants to emphasize the priority of values, deliberative democracy, language, and argument as best characterizing science. Howe is right that education science should include all of these elements. However, while emphasizing these elements, he attempts to minimize others, including the “what works” literature.

Most citizens and education stakeholders probably want to know “what works.” Trying to determine what works is not just a technocratic activity; attempting to identify what works fulfills one of the many responsibilities of the educational research enterprise. Conversely, the “what works” vision sometimes appears naïve. Perhaps we should be asking more frequently, What works, for whom, and in what contexts? How does it work? And how can it continually adjust to changing conditions and be improved? (For more on this point, see Johnson, 2008a.) I would fully agree with critics that determining “what works” is not the only purpose of educational research. But, fortunately, many rich research traditions currently exist in education that address numerous additional and important questions. There is room in education for many kinds of research on many topics and issues, and diversity helps make the educational research enterprise more competent and more exhaustive.

Ultimately, Howe’s view that education science should be rhetorical, or primarily rhetorical, goes too far in reacting against a traditional natural science model such as that advanced in the SRE guidelines. Both the rhetorical and the natural scientific standpoints have some truth value. Education science is very much constituted and influenced by both empirical evidence and careful argumentation. Although I agree with Howe that pragmatism is the most useful philosophy for finding workable solutions to many educational problems, I see pragmatism as supporting a middle position. I prefer a mixed methods research standpoint and argue for balance and integration of multiple standpoints in our research. Sometimes balance and integration will be achieved by a single researcher, and sometimes it will be achieved by a research team; almost always, the use of different approaches, logics, and philosophies will be found in the full literature on a topic. I hope that as educational researchers we will continue to focus on answering our many and diverse research questions and engage in practices that will produce outcomes that we and our stakeholders desire, and I hope that, more frequently, we will work together.

NOTES

1As evidence of the difficulty of defining and reaching agreement on the meaning of science, note that the Oxford Dictionary of Sociology, the Oxford Dictionary of Philosophy, and the APA Dictionary of Psychology do not include entries for “science.” My view is to (a) define science broadly to refer to knowledge in its original meaning in the Latin word scientia (Johnson & Christensen, 2008) and (b) respect different academic disciplines’ or subdisciplines’ choices to use or not use the word science to refer to their activities and products. For example, if philosophy or a subdiscipline of philosophy wants to call itself scientific, I have no objection (as long as it is the commonly held position); let’s not forget that all of our current “sciences” were once part of philosophy—and that philosophy is a necessary partner to any science. “Science” was known as natural philosophy until the 19th century, when William Whewell coined the modern term science (Yeo, 2003).

2Howe (2009) also seems to put the word “positivism” into the mouths of some of the writers he quotes despite their choice of different labels. For example, on page 435, Howe quotes Harding (1993, pp. 50–51) and inserts “positivism” in brackets, although this is not the term she selected to use throughout the text of her 1993 chapter. Harding briefly mentioned positivism in a later footnote, but my point is that it is best to respect the terms that authors choose to use when quoting them.

8A strong dose of Peirce’s synecchism (a rejection of dualism and a view of concepts as continua rather than either/or categories) should help here. For an overview, see Haack (2009).

6When discussing socialization in my introductory sociology courses 20 years ago, I used to tell students that they were the result of four broad factors: nature + nurture + free will + chance, where nature stands for our biology, or genes; nurture stands for our environment, socialization, and cultures; free will stands for human intentionality and choice; and chance stands for the changing and unpredictable parts of our worlds such as serendipity and loose play in a partially deterministic system. The four components operate jointly and interactively (e.g., evolution is both a nature factor and chance factor). Charles Sanders Peirce (1893/1992) called the chance element tychism (see http://www.helsinki.fi/science/commens/terms/tychasm.html).

5SRE also excludes history from education science. History would seem a good candidate for inclusive-science status because it is empirical and it studies the particulars that social science ultimately aims to predict and understand. History sometimes relies on “scientific” theory (e.g., world systems theory) and sometimes relies on quantitative analysis (e.g., event history analysis).
Dewey (1925/1998) suggested “that action and opportunity justify [italics added] themselves only to the degree in which they render life more reasonable and increase its value” (p. 12). His pragmatism/instrumentalism thoroughly entangled ethics and epistemology.

The adoption of a middle position does not mean ignoring what strong qualitative or quantitative research has to say on a particular issue. I recently coined the term dialectical pragmatism (in Teddlie & Johnson, 2009b) to provide a supportive philosophy for mixed methods research that combines Jennifer Greene’s (2007) dialectical approach to mixed methods research and the philosophy of pragmatism. Dialectical pragmatism requires listening and careful consideration of multiple viewpoints. Here is a formal definition: Dialectical pragmatism is a pragmatism tailored for mixed methods research. The base word, pragmatism, refers to the applicability of the core tenets of philosophical and methodological pragmatism (see Table 1 in Johnson & Onwuegbuzie, 2004, or, for a shorter list, Table 4.1 in Teddlie & Johnson, 2009b). The adjective dialectical emphasizes that mixed methods researchers must carefully listen to, consider, and engage in dialogue with qualitative and quantitative perspectives, and learn from the natural tensions between the two perspectives, when developing a workable solution for a mixed methods research study. Dialogue continues at every phase of such a research study. Dialectical pragmatism is most important in equal-status mixed methods designs because in those designs the researcher or team of researchers attempt to give equal weight to the concepts, assumptions, and practices of qualitative and quantitative research (Johnson, Onwuegbuzie, & Turner, 2007). Most generally, the point is to listen dialectically to multiple standpoints and produce an approach to research that synthesizes insights from qualitative, quantitative, and any other relevant perspectives.

REFERENCES


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