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COMMENTARY

Good Research and Bad Research: Extending Zimiles's Criticism

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Herbert Zimiles has written a provocative article on quantitative research. Because his specific critiques of research on infant day care are nominal examples of his much broader arguments, we focus only on his general methodological perspectives in this brief comment. We write as methodologists, a qualitative researcher with a quantitative background (Walsh) and a quantitative researcher completing a book on qualitative research (King; see King, Keohane, & Verba, in preparation).

In our view, Zimiles's (1993) criticism of some quantitative research (work based on numerical data, using formal statistical techniques) is fundamentally correct. However, all of his arguments apply equally to much qualitative research (work based on nonnumerical data, often using direct interviews, and detailed contextual knowledge). Moreover, much that is good about qualitative research also applies to good quantitative research.

Although quantitative and qualitative reseachers use very different styles of research, the standards of good research design and scientific inference apply to each. Quantitative researchers are not always "more rigorous in their observations and inferences" (Zimiles, 1993, p. 000). Qualitative researchers are not always more creative.

Badly designed research should not be confused with the advantages or disadvantages of qualitative or quantitative research in general. The relevant dividing line is not between quantitative and qualitative research, but between good and bad research. Good research is scientific in that it asks or finds good questions, generates research designs that enable us to tell when we are wrong, and gives good indications of the uncertainty of one's inferences. Both qualitative and quantitative research can meet these standards. Three examples of this point are provided in the following sections.

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Rigidities Induced by Measurement Strategies

Zimiles (1993) argues that quantitative data produce rigidities, causing one to limit the questions that come up to those that can be answered directly.

He writes, "as matters now stand, being socialized into social science research primarily entails restricting one's vision and curiosity to that which is observable and measurable" (p. 000). Perhaps Professor Zimiles does not mean quite what he wrote here, but we certainly do support the restriction of quantitative *and* qualitative empirical research to questions that have at least some observable implications. The observations may come from numerical content analyses, forced-choice interview questions, telephone interviews, extended ethnographic interviews, participant observation, or anything else—just so long as they do exist. If, as Zimiles seems to imply, he prefers situations where one cannot observe or measure or gauge the consequence of an empirical question, then there is no hope of learning anything at all about this empirical question.

If we confine Zimiles's (1993) point to the more common criticism that being a quantitative researcher narrows the range of questions one asks, then we agree that this is a very important point. However, the point obviously applies to every other research style and method as well. For example, a qualitative researcher, who has thousands of hours of interviewing experience and myriad contacts among teachers and administrators at a local school, will rarely focus on research questions that can only be answered effectively with a huge quantitative data collection project and a complicated statistical analysis.

All researchers should be more aware of the limitations imposed by their favored methods, but insisting that quantitative researchers be prepared at a moment's notice to spring into a detailed qualitative study, for which they will likely be unprepared, or requiring a qualitative researcher to launch into a massive quantitative data collection project, merely because a good idea occurs to them, is foolish. Modern scholarship is a social enterprise, and participants have specialities, as they should. We see nothing wrong with encouraging researchers to pursue the questions they are most likely to be able to answer effectively. Zimiles's (1993) point should therefore be narrowed further to ask that researchers of all types be aware of the limitations of their methods and to make public the questions that emerge during their research, regardless of whether they are easily answerable with their favored research methodology. This is a point that no researcher should miss.

Seduction by Quantitative or Qualitative Data

Zimiles (1993) argues that researchers tend to give too much weight to precisely measured quantitative information. "Data fetishism," as he calls it, does happen sometimes, perhaps even often, and, of course, it never should.

Zimiles is certainly correct when he argues that quantitative data, presented in "impressive" tables of numbers and accompanied by "scientific-looking" equations, can lure the reader into thinking that a conclusion is more certain than it really is. However, he misses the equally important fact that one can also be seduced by qualitative data, where it is all too easy for a reader to uncritically accept a vivid, personal anecdote over a detailed, objective, and systematically conducted (quantitative or qualitative) research study. Indeed, psychologists have clearly demonstrated the tendency towards these and other common flaws in human reasoning (e.g., Kahneman, Slovic, & Tversky, 1982), and so research strategies that help one avoid these problems should be favored.

If quantitative data are appropriately collected, analyzed, and evaluated, they can be used to produce valid inferences. Similarly, if qualitative information (which also deserves the title *data*, although some qualitative researchers prefer not to use the term) is systematically collected and rigorously analyzed or interpreted, it can produce equally valid inferences. Precision should never be confused with accuracy, and beautifully written stories should not be confused with valid causal inferences. In the end, researchers must be vigilant in ensuring that every descriptive or causal inference includes a best estimate *and* a measure of uncertainty. An inference is good if the best estimate is good and its uncertainty is correct. We generally prefer high levels of certainty, because this implies that we have learned more, but there is nothing whatsoever wrong with reporting evidence that is less certain, so long as this level is accurately measured and reported. It happens that quantitative research is better suited to giving measures of uncertainty (in the form of standard errors, confidence intervals, or margins of error). But this should also be done in qualitative research, although obviously with less formality.

Stunting Theoretical Speculation

Finally, we address Zimiles's (1993) argument that quantitative research in general and measurement in particular stunts theoretical speculation. Here, Zimiles has identified a convention in some quantitative research which discourages using data to find good questions ("data grubbing or fishing") rather than to confirm existing explanations ("hypothesis testing"). We agree that this convention is absurd, but it is more related to a particular tradition in quantitative data analysis than to quantitative data itself.

Qualitative-style researchers often make theoretical speculations before sufficient facts are gathered to support such conclusions, and this is good. However, researchers and practitioners have every reason to be suspicious of nonsystematic attempts to understand our world. Human beings are much better at recognizing patterns than they are at recognizing that there are no patterns. (We even see patterns in random ink blots!)

The contribution of science (not only of quantitative research) is to *separate* theoretical speculation from theoretical evaluations. Bad research, qualitative and quantitative, misses this critical point.

A caution is in order, however, and of course applies to all researchers. The theories that researchers generate should be evaluated with data different from the data used to generate the theories in the first place. Only by using a new (qualitative or quantitative) data set can one be reasonably sure that one's explanation is based on a persistent, systematic feature of the world rather than on change or idiosyncratic factors with no real explanatory power.

Concluding Remarks

Our main point has been that Zimiles's (1993) criticisms are important cautions about research in general, not about quantitative, or qualitative, research in particular. We conclude with a few points regarding practitioners and qualitative research.

One aspect of Zimiles's (1993) article which we find puzzling is that as he criticizes quantitative research, he never suggests that qualitative inquiry may at times provide a needed alternative. Instead, he talks about attending to practitioners. The opinions, insights, and practical knowledge of practitioners are one important source of information. But few practitioners are systematic qualitative researchers. Their knowledge should be valued. But like all knowledge it must be evaluated in systematic and rigorous fashion.

There is a growing body of qualitative research on young children (see Walsh, Tobin, & Graue, 1993), some specific to infant day care (e.g., Leavitt, 1991, in press), and many other topics. Researchers, practitioners, and interested observers who wish to know the answers to numerous pressing policy and educational questions should look to a diversity of methodological perspectives, but only when these perspectives meet the same appropriate standards of inference.

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