

Introducing Students to the Tools of Psychological Research

Robert B. Faux

Review Essay:

Nicky Hayes (2000). Doing Psychological Research: Gathering and Analyzing Data. Buckingham, UK: Open University Press. 420 + xviii pages, ISBN (paperback) 0 335 203795 (£ 18.99, US \$32.95, EUR 35.23)

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Abstract: Teaching and learning the methods of gathering psychological data and analyzing those data can be a daunting task at best for many instructors and students. Nicky HAYES' book *Doing Psychological Research: Gathering and Analyzing Data* (2000) represents an important instructional contribution. The text is aimed at beginning psychology students and covers both qualitative and quantitative approaches to doing psychological research. The book is divided into two parts: Part I is concerned with the methods of gathering data; Part II is concerned with data analyses. Each chapter has exercises, worked examples and self-assessment questions. In this review essay I discuss HAYES' approach to this material and whether this approach is beneficial to students' learning and understanding. I also go beyond this to discuss how HAYES' book reflects changing attitudes in psychology and social science concerning research methodology.

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1. Introduction

Psychology is distinctive from many other social science disciplines in that its subject matter is so varied. The phenomena psychologists study range from the chemical and electrical activity of the brain, individuals in a cognitive science laboratory solving an experimenter-designed problem, the behaviors of groups of people in social settings and so forth. Given the broad range of phenomena that are scrutinized, psychologists should employ a variety of research methodologies, but this has been slow to come about. For many years, experimentation based upon the natural sciences and quantification of data were the methods utilized by psychologists. A change, however, is taking place in psychology and social sciences in general, in which qualitative methodologies are being employed more frequently (SMITH, HARRÉ, & VAN LANGENHOVE, 1995). [1]

Textbook authors are catching up to the practices of researchers (SALKIND, 2000; SCHWEIGERT, 1998). Nevertheless, many textbooks on research methodology present only the scientific method and statistical techniques, albeit quite well, but with little or no mention of alternative approaches to data gathering and analyses (e.g. GREER & MULHERN, 2002; VADUM & RANKIN, 1998). If alternative methodologies are included, they are given short shrift. Nicky HAYES' *Doing Psychological Research: Gathering and Analyzing Data* (2000) is a much needed and welcomed textbook for beginning psychology students, introducing both qualitative and quantitative approaches to research methodology. [2]

In this review essay I hope to present an adequate description of HAYES' book and its instructional import. I will then briefly discuss what I call the *quantitative imperative* in the social sciences and how HAYES' book reflects changes in approaches to data gathering and analyses. [3]

2. Organization and Content of Text

HAYES' book is divided into two parts. Part I, entitled *Gathering data*, is comprised of nine chapters. In Chapter 1 HAYES presents an overview of the diverse subject matter of psychology and the various approaches to studying that subject matter available to psychologists. HAYES explains that some psychologists conduct research on the minutiae of biochemical processes in the brain, while other psychologists study the effects of culture and history on human behavior. Consequently, different levels of psychological explanation are needed to understand human beings. Knowledge only of neuronal firing will not tell you all there is to know about human beings, neither will knowing only how human beings learn. Subsequent chapters in Part I are concerned with how psychologists go about conducting research: (a) experiments, (b) observation studies, (c) questionnaire studies, (d) psychometrics, (e) interviews, (f) case studies and ethnography and (g) analyzing documents. [4]

Part II of HAYES' text entitled *Making sense of data* is comprised of 10 chapters. In this part of the book HAYES' sets about discussing qualitative and quantitative approaches to data analyses and the various forms these analyses may take. It is explained that what a researcher wants to learn from data should guide the choice of analysis. If a researcher were interested in the development of a cognitive skill, say, reading, it would make sense to employ a quantitative approach to analysis. The adoption of this approach would allow the researcher to detect patterns in the data that could explain the developmental trajectory of reading skill. In contrast, a researcher doing biographical research would more likely choose a qualitative approach to data analyses in order to understand and interpret an individual's life experiences. In the chapters of Part II, HAYES discusses the following approaches to analyses: (a) grounded approaches, (b) conversations, discourse and images, (c) protocol analysis, (d) quantitative analysis, (e) descriptive statistics, (f) two-sample tests, (g) correlation and regression and (h) analysis of variance. [5]

In her introduction to the scientific method, HAYES identifies and describes three critical approaches to doing psychological research: nomothetic, idiographic and hermeneutic. These categories inform the rest of HAYES' book and the data collection strategies and analyses described by HAYES can be placed into one of these categories. Importantly, HAYES goes to great pains to stress that each of these approaches strives for rigor in research. This is an important message in this book, and one addressed often. To wit, rigor and systematization are features not only of experimental and quantitative methodologies (nomothetic) but also of interpretative and qualitative methodologies (idiographic and hermeneutic) as well. The categories of nomothetic, idiographic and hermeneutic help to further explicate the various levels of explanation accessible to psychologists. [6]

HAYES' text is very student-friendly. She writes in very "down-to-earth" prose and explains concepts with great clarity. Being extremely thorough in her treatment of topics, HAYES consistently supplies examples of the research method being discussed. Each chapter contains numerous exercises and worked examples for students. There is a bibliography and a glossary of terms. Each chapter ends with a series of self-assessment questions. For example, from Chapter 1: "What is meant by the term 'levels of explanation' and how is it relevant to psychological research?" (p.14) Students are also given the opportunity to put to use concepts from each chapter. Again from Chapter 1: "How might the concept of levels of explanation be useful to a group of research psychologists studying exam stress?" (p.14) Such opportunities to use and think about concepts can only deepen students' understandings of them. It is not enough to know a formal definition of "levels of explanation." Students need to be able to recognize instances of different levels of research, from the study of brain chemistry to fan behavior at soccer matches. HAYES' description of the evolution of psychological research is quite good. She discusses feminist approaches to psychological research and how these have helped to challenge the positivistic approach to research that has held sway in psychology for years. The role played by increased interest in the ethical treatment of research participants, both human and animal, on the acceptance of different research methodologies is given ample space as well. [7]

The aim of the book, as HAYES states, is to "provide a basic grounding across the range of psychological research" (p.1). This she does to a commendable degree. Although the text is introductory and intended for beginning psychology students, I would not hesitate to use it as a supplementary text in a graduate course. Because of the clarity with which concepts are discussed, the numerous opportunities for students to learn and check their knowledge and the equal treatment of qualitative and quantitative methods, I would recommend it highly. I have but two criticisms. First, an explanation of the layout of the book, I think, would be helpful. Second, on page 8, HAYES introduces the name WEBER. I assume she means Max. An explanation would be helpful. [8]

3. The Quantitative Imperative

In this section, I will briefly discuss how the natural science model of doing research became the chief paradigm for doing research in the social sciences. The emergence of the social sciences in the eighteenth century was, in part, the result of attempts to follow the achievements of the natural sciences in the seventeenth century, with the twist of using methods borrowed from the natural sciences to the study of human behavior (FOX, PORTER, & WOKLER, 1995). The adoption of the methods of natural science surely appeared like a logical thing to do given the success of the natural sciences' use of that methodology in understanding the world (BORING, 1961; LAZARSELD, 1961; SMITH, 1998; SPENGLER, 1961). [9]

The social sciences emerged during a period of great intellectual, political and religious upheavals (MAZLISH, 1998; OLSON, 1993; SMITH, 1998). These upheavals changed the way people viewed the world and their place in it. One of the tasks intellectuals of the time set for themselves was the restoration of some sense of order amidst the chaos. It was within this setting that scholars attracted to natural philosophy, medicine and mathematics embarked on efforts to broaden these approaches to understanding and managing the state and society. Science appeared to be the only possible source of certainty (OLSON, 1993). With experimentation and observation human beings could begin to understand themselves and their place in the world. It was at this time that the methods advocated by Francis BACON and utilization of human reason as argued by René DESCARTES were employed to study changing social structures and humans' relationships with those structures. [10]

4. Quantitative Versus Qualitative Approaches to Social Science Research

It is beyond the scope of this review essay to discuss these matters in much depth. It is important, nevertheless, to recognize the legacy these developments have had on the development and practice of the social sciences. Social scientists have aimed for objective empirical research leading to causal explanations of phenomena and, in the case of psychology, human behavior in its many guises. These developments have not gone unchallenged. I would suggest that the perception of methodology in social science is skewed by the notion that its aims are similar to those of natural science; that is to uncover that which is true and real by the correct use of the scientific method (SCHWANDT, 1990; GUBA, 1990; SHOTTER, 1997). [11]

This conceptualization of social science research has led psychologists to emphasize experimental design, laboratory-based research and statistical analyses over more qualitative approaches to research (SMITH, HARRÉ, & VAN LANGENHOVE, 1995). Throughout its history, psychology has tended to explain behavior in terms of isolable units. For instance, behavioral explanations rely on stimuli and responses, cognitive explanations focus on mental operations and statistical explanations focus upon numerical representations of individuals'

performance on some task, say, an intelligence test. Each of these approaches, among others, attempts to reduce explanations of behavior to descriptions of isolable units and the quantification of those units. HARRÉ and SECORD (1972) argue that the methodologies employed by academic psychology throughout most of its history have reflected a mechanistic view of humans, leaving explanations of behavior often bereft of much meaning. As SLIFE and WILLIAMS (1995) point out, the use of scientific methods in psychology has led to a form of reductionism in which human behavior is reduced to a necessary principle or phenomenon. [12]

5. Situating HAYES' Text in the Debate/Discussion

I claim that HAYES' text is important instructionally, but I also claim that it is important in another way: it gives equal treatment to both quantitative and qualitative approaches to gathering and analyzing psychological data. As noted earlier, this makes it a rare text indeed. It has become manifest in psychology that if an investigator properly employs the scientific method, nature will reveal its secrets (DANZIGER, 1990). VAN LANGENHOVE (1995) points out that this perception of research is giving way to a broader view of how psychological research can and should be conducted. As MAGEE (2002) has stated, qualitative methodologies are slowly gaining acceptance in the field of psychology. Textbooks such as HAYES' can only help in bringing about this change. I began this review essay by stating that the subject matter of psychology is varied. If one hired a carpenter to do some house repairs and she or he arrived on the job with only a hammer, I suspect there might be a misgiving or two about the carpenter's ability to do the job, depending on what the job was. If psychologists are to understand human beings, they need a *tool kit* that contains more than methods borrowed from natural science. [13]

HAYES argues that there is no one way to do science. What are you studying? What do you want to know? These questions should guide the researcher in reflecting upon the methods of data gathering and analyses that she or he might employ. As EARLEY (2002) has noted, it is critical as one commences doing research to be guided by what one wants to know, rather than by methodology. Research should be seen as an art, as EARLEY rightly claims. I believe that a researcher reflecting upon what s/he wants to know rather than on how the answer(s) will be uncovered, that is methodology, allows for a much deeper understanding of the phenomena under study and, consequently, a better understanding of how to best to study them. This approach far surpasses an unreflective use of a quantitative methodology. HAYES stresses throughout the text the need to consider a variety of techniques. "The richness of psychological phenomena is not yet reflected by the richness of psychological methodology, but it's beginning to approach it" (HAYES, p.364). HAYES' text represents an encouraging sign that psychology is on the right course. [14]

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Author

Robert B. FAUX is currently a research associate and instructor in the School of Education at the University of Pittsburgh, Pittsburgh, Pennsylvania, USA. He is an educational psychologist, historian and philosopher of psychology. His educational research interests are focused upon explicating the concept of self-regulation and investigating how students learn from case-based instruction. He is currently co-writing a book on the history and philosophy of research methodology in educational research. The adoption of research methodologies in psychology is among his historiographic interests.

Contact:

Robert B. FAUX, PhD

5D28 Posvar Hall

School of Education

University of Pittsburgh

Pittsburgh, Pennsylvania 15260 USA

Phone: 412.648.7097

E-mail: rfaux@pitt.edu

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