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# Mystery in Milwaukee

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## *Early Intervention, IQ, and Psychology Textbooks*

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**ABSTRACT:** *Textbooks in developmental psychology and abnormal psychology were examined for references to the Milwaukee study of the effects of early intervention on intelligence. Descriptions of the study began to appear in 1977 and have appeared with increasing frequency since then. Sources cited include progress reports, technical reports, and book chapters. The absence of any citations to articles in refereed journals reflects that the major findings by the principal investigator were not described in such publications. The Milwaukee study is a cautionary example of how research data can appear in textbooks in two major areas of psychology and seep into the research literature without ever having gone through the journal review process. Some implications are drawn for psychological science and for textbook writers and users in particular.*

The Milwaukee Project was begun in the late 1960s as an early intervention program in which children at high risk for mental retardation were given an intellectually enriched environment and provided with good nutrition and health care beginning within the first year of life. The enrichment program continued until the children entered grammar school. Follow-up assessments were made. The investigators reported average differences in IQ of 24 points between the experimental group and a matched comparison sample of children who had not been given an enrichment program. In 1976, we were present when the principal investigator, F. R. Heber, described these results to the Vermont Conference on the Primary Prevention of Psychopathology (Forgays, 1978). Aside from some nagging doubts about the magnitude of the change, there was no reason for us to be skeptical. The intensive and comprehensive intervention made the improvement plausible. On return to our own campus we discussed the conference proceedings with our colleagues. One department member wrote to Heber for a copy of the paper on the Milwaukee Project. He received no response. One of us (RS), having been a discussant for Heber's presentation, subsequently wrote a personal letter requesting the paper. There was no response.

In the following years, the findings were incorporated into our lectures. Students were very impressed. The apogee came in 1981 when a textbook (Dworetzky, 1981) selected for use in a developmental psychology course devoted three pages to the Milwaukee study. The reference provided was a 1973 University of Connecticut Technical Paper (Garber & Heber, Note 1). We noticed that references in other textbooks (mention of the Heber study was becoming increasingly common) were equally obscure—conference proceedings, one or two book chapters, progress reports, other people's dissertations, and so forth. In order to appraise the scope of the citations and references, we undertook a systematic examination of textbooks in our respective teaching areas: abnormal psychology and developmental psychology. In addition to our own personal copies of textbooks, we had access to the bookshelves of several colleagues who retained examination copies accumulated over years. Even though the samples are not exhaustive, there is no reason to suppose that any bias exists regarding inclusion or omission of the Milwaukee study.

There were 33 abnormal psychology textbooks available published between 1972 and 1982. Table 1 indicates that there was no mention of the Milwaukee study in any of the 14 textbooks published from 1972 to 1976. Of those published between 1977 and 1980, 6 out of 11 mentioned the study. Of those published in 1981–1982, 7 out of 8 mentioned it.

Based on the findings in the abnormal psychology texts, we examined the 45 developmental texts published since (and including) 1977. Of those books published in 1977–1980, 9 out of 30 cited the Milwaukee study, and of those published in 1981–1982, 8 out of 15 mentioned it.

The most noteworthy aspect of these accounts involved the sources cited by the textbook authors. Table 2 summarizes the citations used to refer to the Milwaukee study. The number of sources exceeds the number of textbooks, since some authors cited two different sources. Table 2 shows that there were no references to articles in refereed journals. Citations to unpublished reports have remained relatively stable, while citations to book chapters have increased sharply.

To determine whether the lack of citations to journal articles reflected an oversight on the part of textbook authors, we consulted the *Social Science Citation Index* (1972–1982) and PsycINFO (1967–1982) to locate any articles by Heber. The search produced one review article (Stevens & Heber, 1968), one book (Heber, 1970) on mental retardation, and two articles on the Milwaukee study, both with Carol Falender as senior author. The latter two articles were based on Falender's dissertation and concerned mother–child interaction. None of the textbook authors who described the Milwaukee study cited the Falender and Heber articles.

A second computer search was done to determine the number of authors included within the *Social Science Citation Index* who cited the Milwaukee study. This search was impeded by the lack of journal articles, and thus the absence of volume and page numbers that are ordinarily used to identify specific publications. The results, therefore, must be interpreted with caution. The search indicated that references to the Milwaukee study were seeping into the research literature. For example, there were 13 citations to the 1972 HEW progress report (Heber, Garber, Harrington, & Hoffman, Note 2).

The examination of textbooks in abnormal and developmental psychology revealed that the Milwaukee study entered the literature in 1977 and that references to it increased over time. Textbook authors cited unpublished papers, technical reports, and book chapters. None cited a journal article. This absence reflects the fact that with the exception of the articles on mother–child interaction by Falender and Heber (1975, 1977), there do not appear to be any. Not only is the Milwaukee study quoted extensively in textbooks, but it is also becoming part of the more technical research literature.

This analysis yields a picture of research findings becoming widespread in textbooks in two major areas of psychology without ever having been subjected to journal review. Our experience is that textbooks are regarded as authoritative by the students who read them and the faculty who adopt them for use in their courses. The ubiquity of the Milwaukee study reveals a serious flaw in the system, a loophole through which data can find their way into textbooks without ever going through the journal review process.

Several relevant issues need to be addressed. The Milwaukee findings quoted by the textbook authors were not brand new data that were too current to appear in the journals. Several authors were using as their sources progress reports written eight years

earlier. A second consideration was that Heber was already a widely cited authority in the field of mental retardation, having edited or authored several books and papers, and director of a major research center. There seemed little basis for attributing the lack of journal publication to inexperience. Heber had chaired President Kennedy's White House Panel on Mental Retardation in the early 1960s. This was not a minor study yielding equivocal results by an unknown figure without institutional affiliation. This was a major study with seemingly clear results by a well-known researcher who directed a major research center at a major university.

**Table 1**  
*Number of Textbooks Mentioning Milwaukee Study*

Years	Textbook area of psychology			
	Abnormal		Developmental	
	Mention	No mention	Mention	No mention
1972–1976	0	14	— <sup>a</sup>	— <sup>a</sup>
1977–1978	3	2	3	11
1979–1980	3	3	6	10
1981–1982	7	1	8	7

<sup>a</sup> Not tabulated.

In the midst of our bibliographic investigation, we came across an article by Herrnstein (1982) describing Heber's conviction in federal court on numerous counts of diverting institutional funds. According to Herrnstein, the scandal broke in December 1980. We had not heard of it. This tragic turn of events underscores the urgency of addressing some of the issues raised by the Milwaukee study. The validity of the results is in doubt. The occurrence of financial malfeasance in one institution or project does not by itself prove the findings in another institution or project to be untrue. Clearly there is need for independent evaluation of the original study including interviews and retesting of the experimental and control subjects by psychologists not associated with the original project. There is also need for independent replication of the entire study. Pending either or both of these, we will withhold judgment on the validity of the original findings. We no longer mention the study in our own courses and would urge other instructors to do likewise until the issue of validity is resolved.

Our immediate concern, and what led us to undertake this investigation, was the realization of the ease with which tentative information may become virtual fact. Textbooks are a major source of

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**Table 2**  
Sources Used by Textbook Authors in Referring to the Milwaukee Study

Source cited	Textbook area of psychology					
	Abnormal			Developmental		
	1977-1978	1979-1980	1981-1982	1977-1978	1979-1980	1981-1982
Article in refereed journal	0	0	0	0	0	0
Book chapter	1	1	7	0	1	4
Progress report, unpublished report, conference presentation, or secondary source	3	3	3	4	5	4

information for our students and ultimately for the public. They represent psychological science to a wide audience. Textbook authors bear the responsibility for seeing that the information that they quote is not only correct, but accurate. While we do not hold impossibly high standards for textbook authors, in our opinion some of them may have been derelict in their responsibilities in this instance. We find it difficult to understand how Coleman, Butcher, and Carson (1980) could use as the sole source for their full paragraph description of the Milwaukee study, a 1972 HEW Progress Report. One would have thought that these authors would be obliged to seek more current and substantial citations and, finding none, would qualify their description of the study, which they call "a rigorously controlled experiment demonstrating the benefits of an early intervention program for children considered to be at high risk for retardation" (p. 487). Two of the texts examined (Gallatin, 1982; Sue, Sue, & Sue, 1981) mentioned the critique of the Milwaukee study made by Page (1975). Bower (1979) mentioned Page's criticism but dismissed it. Gallatin (1982) also noted the comment of Beller (1979) that "Heber has failed to respond to the request for raw data and technical details of the study" (p. 876). Forgas (1978), in the published proceedings of the Vermont conference, described Heber's contribution as "the first public written report of the well-known Milwaukee project" (p. xi). In retrospect, the juxtaposition of "first public written report" and "well-known project" in the same sentence seems noteworthy.

An author's responsibilities do not end simply at the point of finding an accurate citation. There is also the responsibility for ensuring, to the greatest degree possible, that the findings themselves are accurate. This is especially important in textbooks or other materials to be disseminated to students or the general public. The various publishers and their reviewers, who are professional psychologists, bear

some of the responsibility for continued use of these citations. In the case of the Milwaukee study, there were several warning flags. The most prominent was the lack of publications in refereed sources. There was also the critical review by Page (1975) and the warning note by Beller (1979) that the principal investigator did not respond to requests for technical details of the study. Of the various textbooks we reviewed, the one that comes closest to what we regard as meeting the full responsibilities of authorship is Gallatin (1982) who, after describing the study, mentions Page's critical review and Beller's warning and concludes her account with the statement, "However, if these findings should prove to be trustworthy . . ." (p. 691). Another positive note is that although the study was cited in 30 of the abnormal and developmental psychology textbooks published since 1977, 34 other authors did *not* mention the study. There was also a statistically reliable trend for the study to be mentioned more often by the authors of abnormal psychology textbooks than by authors of developmental psychology textbooks,  $\chi^2(1) = 5.05, p < .025$ .

Several instances of questioning the accuracy of behavioral data have come to light. Besides the exposure of the Burt twin studies (Wade, 1976) which attracted considerable notoriety, there is the controversy surrounding the behavioral control of alcoholism (Pendery, Maltzman, & West, 1982), and most recently Maher and Maher's (1982) article revealing how a poorly documented metaphor can slip into psychology textbooks under the guise of fact. Such instances are not widespread and psychologists themselves have brought the problems to public attention.

A major structural problem in psychological science is the lack of any requirement for replication prior to publication. Some journals will not accept replications. As a result, many published findings might be spurious. A requirement for replication would have profound implications for psychological

science. At the very least it would dramatically reduce the number of articles published. It would lengthen published articles, but it would also eliminate many factitious relationships requiring turgid, albeit unconvincing, post hoc explanations. It would be worthwhile if at least one American Psychological Association journal adopted a replication requirement on a trial basis and evaluated it after a reasonable period of time. Perhaps it is not too utopian to imagine a psychological science in which researchers knew that findings would have to be replicated before they were submitted, in which journal editors actively encouraged the submission of replication studies by independent investigators (which might themselves be subject to a replication requirement), and in which textbook authors felt responsible for specifying whether or not findings had been replicated.

As a condition of editorial submission, a replication requirement would not necessarily represent a heavy burden. It would make life easier for journal editors and reviewers by reducing the number of submissions. For many authors, replication could be planned as part of the initial design. Instead of a single study involving 50 subjects, the research design could include two independent segments each involving 25 subjects. The results from the two segments could be analyzed and evaluated separately. From the standpoint of statistical significance, two independent replications represent a more powerful test of a hypothesis than a single study involving the same total number of subjects. When there are valid reasons why replication is not possible, this could be noted by the editor at the top of the article. Yet even in the case of unusual circumstances, such as a study of responses to a natural catastrophe, it would be feasible to divide the finite population *at the outset* into two independent samples and conduct two independent studies, preferably involving two different investigators. Such a procedure would require a rethinking of experimental design rather than additional resources. We hope and believe it would winnow out marginally significant or spurious results obtained on single samples. Such results play havoc in the literature because other investigators attempt to include them in their own research design with unsatisfactory results. A replication requirement, incidentally, would not have affected the Milwaukee study insofar as journals were con-

cerned, since the investigators did not choose to publish their main findings in refereed journals. It would have had a major impact on descriptions of the study in textbooks. We can hope, at the least, that this sad episode will cause all of us to be more careful in our scholarship.

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