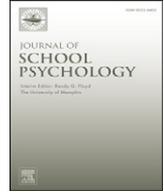




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Distinguishing science from pseudoscience in school psychology: Science and scientific thinking as safeguards against human error

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ABSTRACT

Like many domains of professional psychology, school psychology continues to struggle with the problem of distinguishing scientific from pseudoscientific and otherwise questionable clinical practices. We review evidence for the scientist–practitioner gap in school psychology and provide a user-friendly primer on science and scientific thinking for school psychologists. Specifically, we (a) outline basic principles of scientific thinking, (b) delineate widespread cognitive errors that can contribute to belief in pseudoscientific practices within school psychology and allied professions, (c) provide a list of 10 key warning signs of pseudoscience, illustrated by contemporary examples from school psychology and allied disciplines, and (d) offer 10 user-friendly prescriptions designed to encourage scientific thinking among school psychology practitioners and researchers. We argue that scientific thinking, although fallible, is ultimately school psychologists' best safeguard against a host of errors in thinking.

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All of us are prone to errors in thinking. School psychologists, despite being highly intelligent and well-educated, are no more immune to such errors than anyone else. In school psychology, cognitive mistakes are especially problematic when they contribute to the adoption of pseudoscientific practices—those that seem to be grounded in science but are not. Such techniques may be ineffective or even harmful to school-children and more broadly, can lead to suboptimal assessment, intervention, or both. Therefore, it is imperative that all psychologists, including school psychologists, embrace scientific thinking tools as

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safeguards against cognitive errors that can contribute to belief in pseudoscientific techniques. In this article, we hope to persuade school psychologists—both practitioners and researchers—to incorporate such safeguards into their everyday thinking, clinical practice, research, and teaching. For those school psychologists who are already making regular use of these safeguards, we hope to provide them with friendly intellectual ammunition for combating resistance to science among their colleagues.

1. The relation between science and practice in school psychology

1.1. The scientist–practitioner gap in school psychology

Concerns about the wide gap between science and practice in psychology, including school psychology, are ubiquitous and longstanding (American Psychological Association Presidential Task Force on Evidence-Based Practice, 2006; Heppner, Carter, Claiborn, & Brooks, 1992; Kazdin, 2008; Weisz, Sandler, Durlak, & Anton, 2005). This *scientist–practitioner gap*, as it has come to be called (Cautin, 2011; Fox, 1996; Tavris, 2003), is marked by a striking disjunction between the scientific evidence regarding the best available assessment and treatment practices on the one hand, and what practitioners—in this case, school psychologists—actually do in their routine practices, on the other.

The popular term, “scientist–practitioner gap,” may imply, misleadingly in our view, that one is necessarily either a scientist or a practitioner, not both. To the contrary, as in clinical psychology, we can distinguish between two conceptually independent dimensions in school psychology: science versus non-science, on the one hand, and research and practice, on the other (McFall, 1991). This two-fold distinction results in four quadrants. One can be a scientific researcher, a nonscientific researcher, a scientific practitioner, or a nonscientific practitioner.

This distinction underscores a crucial point. The concept of the scientific practitioner is not an oxymoron, because even school psychologists who conduct no research can in effect act as scientists in the clinical setting. That is, they can bring rigorous scientific thinking to bear on the evaluation of schoolchildren’s behavioral, emotional, and learning problems. Moreover, they can be active and discerning consumers of the research literature in school psychology and function as scholar–practitioners (see also Trierweiler & Stricker, 1992) who are continually striving to ground their practices in the best available research evidence.

Alongside their colleagues in clinical psychology (e.g., Lilienfeld, Lynn, & Lohr, 2003) and social work (Thyer & Pignotti, *in press*), some school psychologists and allied mental health professionals have called for an increase in reliance on evidence-based practices to help close the scientist–practitioner gap (Bradley-Johnson & Dean, 2000; Hoagwood & Johnson, 2003; Hunter, 2003; Kratochwill, 2006, 2007; Kratochwill & Shernoff, 2003; Kratochwill & Stoiber, 2000; Miller & Nickerson, 2006; Stoiber & Kratochwill, 2000; Walker, 2004). As noted by Reynolds (2011), effective school psychologists must learn not to merely administer evidence-based interventions but also to become thoughtful and discerning consumers of the research evidence in school psychology:

It is not enough to read the literature or to attend in-service or continuing education seminars. We must read and listen carefully. Just because a paper is published in a peer-reviewed journal does not mean the science is accurate or necessarily strong (Reynolds, 2011, p. 5).

Put in slightly different terms, all school psychologists, regardless of the setting in which they operate, need to develop and maintain a skill set that allows them to distinguish evidence-based from non-evidence based practices. Despite the crucial importance of this skill set, some domains of school psychology, like those of allied fields, remain characterized by popular but poorly supported techniques.

Indeed, the problem of questionable and unvalidated claims in school psychology and allied fields, such as educational psychology, is hardly new. Forty-five years ago, Glass (1968) wrote of “educational Piltdown men” (p. 148) infiltrating the research literature on schoolchildren with disabilities, in reference to the infamous early 20th century Piltdown Man hoax that duped many credulous physical anthropologists into accepting the discovery of a new hominid ancestor. (The Piltdown forgery turned out to consist of a human skull and an orangutan jaw, with teeth from a chimpanzee, hippopotamus, and elephant tossed in for good measure.) Referring to “insensitivity to evidence” (p. 148) and the “wishful will to believe” (p. 150) as key contributors to belief in educational Piltdown men, Glass offered three examples of then-popular but unsupported claims concerning exceptional children: (a) a published study that purported to demonstrate

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