



INTRODUCTION
TO THE SPECIAL
SUBSECTION

Frontier Science with ‘Dirty Test Tubes’ - Flaw or Feature?

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JSE readers are undoubtedly familiar with psychology’s classic demonstration of cognitive bias known as the ‘duck-or-rabbit illusion’—an artfully constructed image that can appear as either animal simply by shifting one’s mental perspective (Jastrow 1899, 1900; cf. Brugger & Brugger 1993). Likewise, there is often hot debate about whether the use of ‘dirty test tubes’—i.e., looser, naturalistic methods that collect observations or measurements under real-world conditions—are ‘flaws’ or ‘features’ in academic studies. This too is a matter of perspective (Mo, 1981). For instance, many scientists encourage rigid experimental protocols to minimize confounds that can contaminate research results. Others adopt more open, in-field designs to optimize the ecological validity of data that better support interpretive frameworks. In fact, Mitchell and Tetlock (2022) argued that social science’s over-emphasis on internal validity versus construct and external validities only leads to theories which fail to replicate in the field and thus cannot be used to understand or address the phenomena in question.

James McClenon’s Target Article (“Online Group-PK Experiments: Hypothesis Testing and Theory Development”) presents a provocative move in this latter direction, which hopefully will stir constructive dialogues and eventual advancements concerning gainful methods in parapsychology and anomalistics more broadly. In full disclosure, this paper received strongly mixed reviews upon submission. Some of the original peer-reviewers appreciated McClenon’s intentional and realistic approach to what is undoubtedly a multivariate phenomenon, whereas others sharply criticized his efforts for an ostensible lack of structure or controls. There were even frank assertions that his work did not qualify as legitimate ‘research.’

But what exactly constitutes ‘research’? Aziz (2017, p. 101) clarified that the term simply denotes a systematic method of obtaining information pertinent to some question or set of questions. There are several ways to obtain data that form the subsequent answers. The procedure selected depends on several factors, including the nature of the issue, the setting in which the research is to be conducted, and the background or disciplinary orientation of the investigators. While basic research aims to discover the fundamental principles of the topic in question, applied research is undertaken with specific practical problems in mind. Naturalistic observation is a valuable tool in this context because of its flexibility, external validity, and suitability for topics that cannot be studied as easily in laboratory settings. Yet, naturalistic observations can involve a lack of scientific control, ethical considerations, potential for bias from observers or participants, and limited generalizability.

These and other important matters are discussed by three diverse researchers who kindly accepted the invitation to prepare Commentaries on McClenon’s approach and conclusions: *James Carpenter* (applied and clinical parapsychology, e.g., Carpenter,



2012), *Walter von Lucadou* (psi and physics, e.g., von Lucadou, 1995), and *Gerhard Mayer* (cultural and interdisciplinary studies of anomalistics, e.g., Mayer, 2009). These individuals did not peer review the original submission, so they represent fresh eyes and perspectives on the underlying issue of dirty test tubes as flaws versus features for hypothesis testing or theory development.

JSE's editorial team makes no judgment about the validity of McClenon's conclusions, but we heartily endorse frontier research using mixed or multiple methods that produce more robust and compelling results than single-method studies alone (Morse, 2003). Therefore, McClenon's naturalistic but controversial methods nicely illustrate the difference between the 'Trojan Mice' versus 'Trojan Horse' approach to solving for complex or unprecedented problems (cf. Bolton, 2020). This useful analogy was obviously inspired by the legendary Trojan Horse story. But instead of a massive wooden horse (i.e., homogeneous and rigid protocols) in this context, we imagine leveraging small, inconspicuous 'mice' (i.e., a diverse array of exploratory or naturalistic methods) to tackle big challenges. Waters (2021) explained it this way: "Picture a great maze that is all but impossible to solve. Two people stand ready to find the way through – a small girl with her shoebox full of mice and a great leader astride his horse. They start. The leader rides in with a plan to explore sector by sector. The girl releases her mice. Eventually a mouse emerges from the exit, while from within can be heard the rider, still executing the search plan. While the horseman is still applying his idea, a mouse has found a way through" (para. 3–4).

McClenon's research might thus be described as a single mouse exploring the real-world maze that represents the thorny and twisted landscape of putative macro-PK (psychokinesis) phenomena, i.e., directly observable 'mind-matter' interactions. The data that he collected with 'dirty test tubes' has yielded several practical insights deserving of careful consideration and follow-up study. Indeed, time will tell which 'mixed methods' (Trojan Horse or Trojan Mouse) will finally crack the code on putative psychokinesis. Meanwhile, hypothesis-testing and theory development often benefit from the simultaneous use of both rigidly controlled experiments that define the Trojan Horse and more naturalistic observations from the Trojan Mice. 'High-internal validity' and 'high-ecological validity' designs both strive to solve a research question and thus are complementary in that each has different flaws and features. Embracing both ap-

proaches from this vantage point, Schwenk (1982) would say that frontier scientists ultimately never need to sacrifice rigor for relevance.

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