

Comment

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Experimental sciences by their nature have found it relatively easy to deal with simple closed systems. When they come to study more complex, open systems, however, they have more difficulty in generating testable models, must rely more on multivariate approaches, have more diversity from experiment to experiment (and thus more difficulty in constructing replication attempts), have more noise in the data, and more difficulty in constructing a linkage between concept and measurement. Data gatherers and other researchers are more likely to be part of the system themselves. Examples include ecology, economics, social psychology and parapsychology. Parapsychology can be regarded as the study of apparent new means of communication, or transfer of influence, between organism and environment. Any observer attempting to decide whether or not such psychic communication has taken place is one of several elements in a complex open system composed of an indefinite number of interactive features. The system can be modeled, as has been done elsewhere (e.g., Morris, 1986) such as to organise our understanding of how observers can be misled by themselves, or by deliberate frauds. Parapsychologists designing experimental studies must take extreme care to ensure that the elements in the experimental system do not interact in unanticipated ways to produce artifact or encourage fraudulent procedures. When researchers follow up the findings of others, they must ensure that the new experimental system sufficiently resembles the earlier one, regarding its important components and their potential interactions. Specifying sufficient resemblance is more difficult in complex and open systems, and in areas of research using novel methodologies.

As a result, parapsychology and other such areas may well profit from the application of modern meta-analysis, and meta-analytic methods may in turn profit from being given a good stiff workout by controversial data bases, as suggested by Jessica Utts in her article. Parapsychology would appear to gain from meta-analytic techniques, in at least three important areas.

First, in assessing the question of replication rate, the new focus on effect size and confidence

intervals rather than arbitrarily chosen significance levels seems to indicate much greater consistency in the findings than has previously been claimed.

Second, when one codes the individual studies for flaws and relates flaw abundance with effect size, there appears to be little correlation for all but one data base. This contradicts the frequent assertion that parapsychological results disappear when methodology is tightened. Additional evidence on this point is the series of studies by Honorton and associates using an automated ganzfeld procedure, apparently better conducted than any of the previous research, which nevertheless obtained an effect size very similar to that of the earlier more diverse data base.

Third, meta-analysis allows researchers to look at moderator variables, to build a clearer picture of the conditions that appear to produce the strongest effects. Research in any real scientific discipline must be cumulative, with later researchers building on the work of those who preceded them. If our earlier successes and failures have meaning, they should help us obtain increasingly consistent, clearer results. If psychic ability exists and is sufficiently stable that it can be manifest in controlled experimental studies, then moderator variables should be present in groups of studies that would indicate conditions most favourable and least favourable to the production of large effect sizes. From the analyses presented by Utts, for instance, it seems evident that group studies tend to produce poor results and, however convenient it may be to conduct them, future researchers should apparently focus much more on individual testing. When doing ganzfeld studies, it appears best to work with dynamic rather than static target material and with experienced participants rather than novices. If such results are valid, then future researchers who wish to get strong results now have a better idea of what procedures to select to increase the likelihood of so doing, what elements in the experimental system seem most relevant. The proportion of studies obtaining positive results should therefore increase.

However, the situation may be more complex than the somewhat ideal version painted above. As noted earlier, meta-analysis may learn from parapsychology as well as vice versa. Parapsychological data may well give meta-analytic techniques a good workout and will certainly pose some challenges. None of the cited meta-analyses, as described above, apparently employed more than one judge or

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