

DEBATE: ENTANGLEMENT AND HOMEOPATHY

Presentiment or entanglement?

An alternative explanation for apparent entanglement in provings

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A number of authors have recently discussed the possible role entanglement in homeopathy. Walach *et al* have published a homeopathic proving which they interpreted as demonstrating entanglement between placebo and verum groups in a proving. The lack of a 'run-in' period was a weakness of this trial.

We present further results of our proving of *Belladonna* which show that subjects who reported symptoms during the placebo run-in period ('presentiment provers') were more likely to report symptoms during the treatment period. This data suggests and the observations of Walach *et al* may be explicable by conventional mechanisms including differential reporting and constitutional type *Homeopathy* (2005) 94, 92–95.

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Introduction

Walach *et al*'s recent paper¹ is an important contribution to our understanding of homeopathy, particularly in view of our experience with double-blind, randomised, controlled trials involving pathogenic proving.^{2,3} Walach's method evaluated proving used a double-blind, randomised, controlled trial while mirroring the unique and individual nature of pathogenic proving studies. As such it presents an important methodological progression for homeopathy. Walach *et al* present data suggestive of non-local effect as a possible mechanism for ultramolecular homeopathy. Hyland and Milgrom have also made contributions to this debate.^{4–8} In this paper we consider the implications of these theories and evaluate the methodology and subsequent conclusions suggested by Walach *et al*, as well as presenting new data from our own previously published proving trial.

Non-local effects and entanglement theories

If Walach *et al*'s interpretation of their data supports the notion of non-local effects for homeopathy, further understanding of the mechanism by which this may be acting is needed. Walach introduced the concept of entanglement into the homeopathic literature.^{9,10} His theory is based on the assumption of weak quantum theory which, if true, suggests that entanglement is a feature of the macro-world when certain conditions, such as complementarity, are met. So, entanglement is not just a feature of very small parts of the (micro) world. This hypothesis fits well within the general philosophy and practice of homeopathy. The homeopathic remedy provides a signal which is transmitted in a quantum manner through entanglement.^{8,11} The signal of the homeopathic remedy, given therapeutically, 'corrects' the intelligent system of the body by shifting the body's system in the opposite direction to which they are being drawn (pathology) so it compensates in the therapeutic direction. Aggravations fit well within this framework of information transfer.⁴ Hyland's theory^{12,13} does not assume weak quantum theory. Instead it supposes that the only form of entanglement is a micro-level, the entanglement conventionally accepted by physicists. However, in the case of complex systems such as humans, emergent

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properties arise from these micro-level entanglements which enable positive healing environments to emerge within the therapeutic relationship. The therapeutic intent of the practitioner and patient may be important in this context. If emergent entanglement occurs, then this theoretically will facilitate entanglement at the macro-level.

Whereas Walach *et al*'s view¹⁴ is that therapy is mediated via a signal, Hyland suggests that there is no signal implicit in the therapeutic interaction. Instead, therapy involves the therapist generating a context which enables the patient to entangle within that context. This could represent the theoretical foundation of the therapeutic relationship. Emergent entanglement is a healthy state in that it enables the patient to self-organise, according to whatever plan they need. Simply enabling the patient to entangle with context is sufficient to initiate the healing process. Thus, from this view, the homeopathic aggravation is not a response to a signal, but rather the best method of healing within a complex biological system.

Entangled predictions

Walach *et al*'s theory of entanglement suggests that it is a natural feature of the world in which we live. Consequently, there is entanglement between verum and placebo in all clinical trials. Walach claims support for this from his recently published proving.¹ It is possible to explain Walach's observations from this study through non-local effects, but we believe Walach's arguments are weak (see below). Hyland's emergent entanglement does not suggest that entanglement is a natural feature of the world. Instead it is a natural feature of people- or complex systems. To put it simply, entanglement manifests itself in relation only to people. Specifically, we would expect that people respond to homeopathy following an effective homeopathic consultation even if they do not take the medicine. While these entanglement theories offer the potential to understand a variety of different therapeutic interactions, conclusively demonstrating their validity in homeopathic clinical trials would be a major challenge. It may be better to choose other experimental models to evaluate these theories, possibly utilising psychological experimental environments rather than homeopathy because of the potential for confusion that exists as a consequence of unknown factors operating within a homeopathic context.

Is Walach *et al*'s interpretation of his data correct?

There are several problems associated with Walach *et al*'s study.¹ None of the primary outcomes provided evidence for an ultramolecular effect and the inter-

pretation of the secondary outcomes presented is open to question. Although the method used in attempting to identify symptoms was well designed, the materia medica expert was unable to guess the medication, even when given the unblinded list of remedies. This suggests that symptoms were not specific enough to describe the remedy picture. The lack of a placebo run in phase also makes it difficult to interpret the significance of the increased levels of symptom reporting for both verum and placebo groups in the treatment phase. This may be due to a 'trial effect', a reflection of the increased time period of data collection or, as the authors suggest, evidence of non-local effects. It is not clear whether the reported symptoms were adjusted for the time period of the study which involved 1 week's baseline and 2 weeks' of symptom reporting. Interpreting this data is complicated by the fact that 4 of the 11 subjects did not report any baseline symptoms.

Our previous proving also identified a significant increase in symptom reporting from baseline to treatment phase in both treatment groups.³ *Cantharis* is a poorly defined remedy, so it is problematic to define typical and atypical symptoms. Furthermore, the effect size for the remedy-specific symptoms was smaller than that for atypical symptoms, but this could be simply related to background noise. Finally, Walach *et al* found that there were more typical remedy symptoms for both groups during the treatment period, this is the central finding they invoke in support of their hypothesis of non-locality. While this finding is consistent with a non-local effect, the hypothesis that the reported symptoms are more 'suggestible' is also consistent with a conventional psychological explanation suggesting that some symptoms are being more frequently reported than others when there is an expectancy of symptom reporting.¹⁵

Do presentiment provers demonstrate non-local effects?

Our provings involved *Belladonna* 30C. Here we present, for the first time, evidence of 'presentiment' provers. The proving was of a different structure to that of Walach *et al*, but involved a placebo run-in period with a clear pre-trial definition of a proving response.² Data was analysed on an intention to treat basis, and each individual's outcome was determined blind prior to breaking the randomisation code. Differences between *Belladonna* 30C and the placebo group were assessed by comparing the proportion of provers in both groups, using χ^2 or Fisher's exact test depending on the expected cell size. Presentiment provers were defined as those individuals who reported true proving symptoms during the placebo run-in week and could be defined

Table 1 Provers during placebo run-in and treatment phases

Study phase	Medication	N assessed	Reported symptoms	Difference (95% CI)
Baseline: placebo run-in*	Belladonna (post-randomisation)	101	8 (7.9%)	1.2 (1.129, 1.271)
	Placebo (post-randomisation)	105	7 (6.7%)	
Treatment phase	Belladonna	101	14 (13.9%)	0.4 (0.306, 0.494)
	Placebo	105	15 (14.3%)	

*All subjects received placebo during run-in, and were unaware of medication allocation during the treatment phase.

Table 2 Treatment phase proving rates of presentiment provers

	N	Reported symptoms in treatment group		Did not report symptoms in treatment group		Significance
		N	%	N	%	
Reported symptoms during run-in	15	6	(40.0)	9	(60.0)	P = 0.02
Did not report symptoms during run-in	191	23	(12.0)	168	(88.0)	

Difference between groups assessed by McNemar's test.

as "provers" with reference to a predefined definition of proving³ (Table 1).

Of the 15 subjects who reported symptoms during the placebo run-in week, 8 were ultimately randomised to Belladonna and 7 to placebo. Six (40%) continued to manifest symptoms in the treatment phase, while only 23 (12%) of the 191 who did not report symptoms in the run-in phase, reported them in the treatment phase. (McNemars $P = 0.02$), see Table 2). Logistic regression confirmed that being a presentiment prover predicted being a treatment phase prover (OR 4.87, $P = 0.009$, CI 1.59,14.94).

This data was not presented in our original publication but we feel it is now appropriate to make it available. A small but significant group of presentiment provers ($n = 15$, 7% of the study population) were identified in this study. A higher proportion of these presentiment provers (40%) reported symptoms in the active phase compared to 'non presentiment' subjects (12%). In a clinical context, the concept of presentiment provers has been considered to be a measure of intentionality^{16,17} implying a poorly understood but non-local effect. Our new data therefore supports Walach *et al's* suggestion of generalised entanglement in the context of a much larger proving study that involved different methodology. Unfortunately, the criticisms levelled against Walach's study can also be levelled against ours. Are the presentiment provers simply people who are prone to generating the particular symptoms associated with *Belladonna*? Perhaps because they are especially 'sensitive' or 'constitutionally' *Belladonna*. Consequently, our results, like Walach *et al's*, could simply be the result of differential symptom reporting and not due to any form of entanglement or non-local effect.

Conclusion

Preliminary data from proving studies are consistent with non-local effects and entanglement theory, but are equally consistent with conventional explanations based on differential symptom reporting and the constitutional type of healthy volunteers. While non-local effects and entanglement may provide novel insights into the process that underpins ultramolecular homeopathy, the data presented to date remains unconvincing.

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