One of the challenges of scientific investigation, perhaps especially in the complex arena of medicine, is teasing apart specific from non-specific effects. A specific effect is one that derives from the details of a particular intervention, with a distinct mechanism of action. Non-specific effects are everything else.

Non-specific effects are part of placebo effects, but not the same as placebo effects also include statistical effects, bias, and other sources of illusory effects. Non-specific effects are real; they just do not derive from the specific intervention itself.

For example, with therapy techniques for anxiety or depression, non-specific effects would include the caring attention of the therapist, taking time out from one's regular schedule to think and talk about their feelings and problems and the hope generated from taking positive action to address one's symptoms. Any specific technique, therefore, would seem to be effective due to these non-specific effects of the therapeutic interaction.

Before one claims that moving the eyes back and forth, or guided imagery, or being regressed to a prior life has specific effects, and is therefore evidence of a specific mechanism, the non-specific effects outlined above need to be carefully controlled for. This is especially true when the alleged mechanism is outside the bounds of currently known biological phenomena.

This confusion of specific with non-specific effects is at the core of much of what is labeled "alternative" medicine. Acupuncture is another great example. The best evidence strongly supports the conclusion that there are only non-specific effects from acupuncture, deriving from the kind attention of the acupuncturists. It doesn't seem to matter where or even *if* you stick needles through the skin, arguing against any specific underlying mechanism.

Another treatment increasingly popular in the world of alternative medicine is meditation, or specifically transcendental meditation. Interestingly, one study on TM (http://www.ncbi.nlm.nih.gov/pubmed/23204989) contained the following statement: "Transcendental Meditation and TM are trademarks registered in the US. Patent and Trademark Office, licensed to Maharishi Vedic Education Development Corporation and are used with permission." I noticed that few other studies of TM contained this statement, and realized it was probably because the studies were all conducted at the Maharishi University of Management (more on that below).

TM is a specific meditation technique and proponents claim that it is effective at reducing blood pressure, reducing cardiovascular risk factors and generally promoting health. This sounds like another perfect example of confusing specific and non-specific effects. Relaxation therapy and stress reduction have been demonstrated to lower blood pressure and cardiovascular risk. There is a known mechanism for this - emotional stress increases sympathetic tone, which raises blood pressure and stresses the heart.

Unless there is very good evidence controlling for the non-specific effects of stress reduction, there is not reason to believe that TM has any additional specific effects that relate to the details of the TM procedure. Occam's razor would favor the known over the unknown as an explanation.

In looking over the literature on this question, however, I ran into a significant problem. All of the primary research into TM is conducted at one or another Maharishi institution. Every one. Perhaps this has something to do with their patent. I could not find any truly independent replication. I did find one review (the one above with the patent disclaimer), but this was just a review of Maharishi studies.

A conflict of interest alone does not prove that the results are unreliable, but given how difficult it often is to tease apart specific from non-specific effects and the obvious motivation to promote TM, it certainly places a question mark at the end of all such research. Further, it is impossible to fully blind such interventions - subjects know if they are performing TM or not.

Subjects could be trained in one of several relaxation techniques, without being told which one, and then assessed by blinded evaluators. That would be one way to reasonably separate specific from non-specific effects of TM. Until then, it's difficult to take pro-TM research at face value.

Further, the result of TM on blood pressure and cardiovascular risk tend to be modest, barely statistically significant and variable from study to study (where various outcomes are measured - systolic vs. diastolic BP and stress response vs. ambulatory blood pressure, for example). (http://www.ncbi.nlm.nih.gov/pubmed/9134445
and
http://www.ncbi.nlm.nih.gov/pubmed/15691622

). The data, in other words, are a bit noisy if generally positive.

I remained unconvinced that there is any specific effect from TM that is not present with any reasonable method of stress reduction. The kind of studies that would tease apart specific from non-specific effects, independently replicated by researchers not affiliated with TM, would be more convincing.

Meanwhile, any method of stress reduction appears to be a reasonable intervention for high stress people with increased blood pressure or cardiovascular risk.

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