

Combining Research and Therapy

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(Based on a presentation given at the 2016 Annual Conference)

It is never easy for a busy therapist to fit research into their time table; their principal focus is naturally upon improving the lot of the patient. Our lives are so often driven by implicit cost/benefit analyses; the cost of adding in research is clear, but the benefits are rather less apparent. Clearly data-gathering and the like cost time and effort, but what is gained in return? It is not the exciting discovery that hypnosis works; practitioners know that already, that's why they use it. I shall argue that the benefits of research are more subtle and indirect, but are none the less valuable and exciting. I shall also outline just one possible research plan, in case anyone is in a position to join a group that would carry out the data collection.



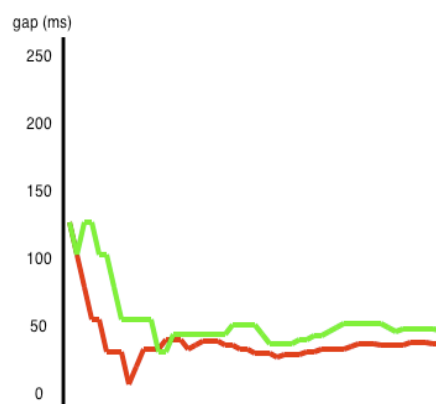
It must be a very jaded clinician who does not feel a certain thrill when a difficult case seems to be transformed by the magic (it still looks like magic sometimes) of hypnosis. In contrast, the run-of-the-mill client, who is not a particularly 'interesting' case and merely improves with treatment, doesn't feel like any big deal. However, what about one hundred such patients, and what if it could be shown that those modest changes were actually significantly greater than are achieved by traditional approaches? That begins to be exciting; a hundred lives have been improved and, what is more, there is the potential to make sceptical colleagues sit up and take notice. In a sense one hasn't learned anything beyond what was known already (hypnosis works) but formalising and quantifying that knowledge is rewarding to the researcher and can begin to make an impact in our NICE-governed world. Moreover, in its basic form such research requires no more than some simple before and after assessments.

I shall now turn my attention to slightly more sophisticated research, studies that utilise specialist apparatus and formal testing. This immediately sounds daunting and/or impractical for an everyday, busy practitioner. In truth, the testing I have in mind is quick and simple, and could well have less impact on the therapist than carrying out the before and after assessments mentioned earlier. The driver for this line of research is not to show that hypnosis works, but to show for *whom* it works best. I do not believe the NHS is actively opposed to hypnosis, nor that personnel are strongly sceptical that it can work; it is more that they are sceptical that it is worth all the bother (as they see it). Nevertheless, Les Brann's work¹ makes it abundantly clear that, although treatment using hypnosis requires some time and hence money, a successful outcome saves the NHS considerably more, by reducing or eliminating long-term medication and repeated GP visits. Who wouldn't use this approach, if they knew it was going to work? There's the rub. Even the fiercest advocate of hypnosis has to admit that some people respond better than others. If we could identify, with a good degree of accuracy, which patients were going to respond well, then I believe the NHS at large would begin to share our enthusiasm for hypnosis. After all, we now live in an era when the impact of genes upon drug efficacy is recognised and we are beginning to tailor drugs to suit the patient. Hypnotic responsiveness is similarly dependent upon genes, but I am not advocating the genetic profiling of all patients (although that will no doubt become standard practice one day). There is another way that has the potential to provide a rapid indication of a person's likely response to hypnosis: to measure their hemispheric asymmetry.



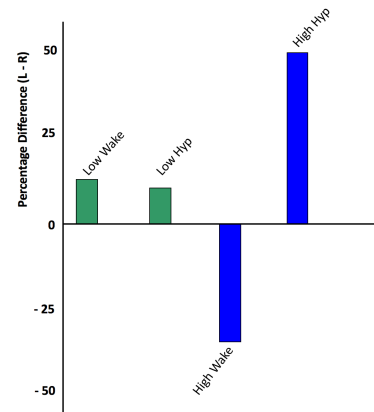
One way of assessing the differences between the brain's hemispheres is to compare their processing speeds. This can be done by making inter-hemispheric temporal order judgments. In this context *temporal* relates to time, and the judgment required is simply to say which of two events came first, i.e. to decide upon their order. In this particular test the two events are brief light flashes from two light emitting diodes (LEDs). These are mounted in the outer corners of a pair of spectacles, so that each is visible only to the adjacent eye. The neural connections from the retinas are such that each light flash is first registered by the opposite hemisphere; thus, a flash from the right hand LED stimulates the left visual cortex. There are various versions of the apparatus that runs the experiment, but the one shown on the left is stand-alone, driven by a microcircuit and showing the results on two seven-segment displays.

When someone is tested the flashes start with a comfortable gap between them, so that it is easy to decide which came first. The person being tested then pushes a button (under her thumbs in the picture) on the side which seemed to be leading (left- or right-first are presented randomly). Each time the response is correct the gap is made a little shorter, until a mistake is made. At that point the gap is increased sufficiently to get a correct response, then the gap-reduction continues, but this time with smaller steps. This 'backing up' and reduction of step size repeats, until the exact point is determined at which a person is just unable to tell which side flashed first. Perhaps surprisingly, the gap required depends upon which LED flashes first. The graph shows a typical sequence of responses. The red line represents left-first and the right-first line is in green. Both left-right and right-left gaps started at 125 milliseconds, although the green line obscures the red at the top. This person had no problems with left-first (red), so the gap was quickly made smaller and smaller, until at about 10 ms it had become too brief for them to judge which side was leading, so the gap had to be increased. The user clearly made a mistake with the button pressed on one of the early right-first presentations. Consequently, the green line backs up early on, but subsequently the right-first gap also reduces, to reach around 50 ms (one twentieth of a second). The red line (left-first) levels out slightly lower, at about 40 ms, so when the flash sequence was left-right this viewer could recognise the temporal order with a 20% smaller gap than when it was right-left. Because *left*-first is faster it implies that the *right* hemisphere is processing more quickly.



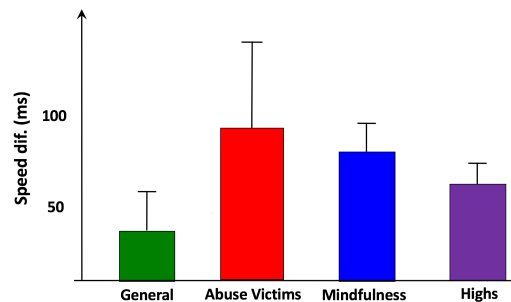
Why are these processing speeds of interest? It is commonly stated that (for most people) hypnosis is a right hemisphere phenomenon. If that is so, one might predict that the right hemisphere would perform well (need a smaller left-first gap) when a person was hypnotised. That is all well and good, but we are looking for a quick test that doesn't involve actually hypnotising a person. To check the viability of the temporal order test, it was carried out on people of high hypnotic responsiveness ('highs'), and also upon 'lows'; this was done both with and without hypnosis². The results are shown on the next page. The bars represent the degree of difference between the two hemispheres; upward pointing bars show that the right hemisphere is processing more quickly. It turned out that lows behaved very much as shown

in the earlier graph: they tended to have slightly faster acting right hemispheres when normally awake, and (unsurprisingly, since they were not hypnotically responsive) nothing much changed when hypnosis was attempted. However, the situation was very different with hypnotic highs. In the absence of hypnosis they tend to show much faster left hemisphere processing, but when hypnotised they switch to faster right. The fast right is, of course, in line with the notion that hypnosis enhances right hemisphere activity, but the useful finding here is that there is a clear difference between people of low and high susceptibility, even before one tries to hypnotise them. This means that a simple test, lasting about three minutes, appears to be sufficient to identify strong candidates for hypnosis.



The probable usefulness of the test has been further supported by evaluating it with other populations. It is well known that adults who were abused as children are likely to be more responsive to hypnosis³. On this basis one can predict that these people should show a larger than normal hemispheric asymmetry. For reasons that will be explained below, people who practice mindfulness are an interesting population, so a small group of these has been tested too.

This bar chart shows results obtained only in the waking state; people were not tested in hypnosis. The data have been expressed slightly differently from before; they simply show the difference, in milliseconds, between the shorter and longer gaps, while ignoring which hemisphere was the faster. The error bars (stalks) indicate the amount of variability (expressed as the standard deviation)



between people; not all group members behave in the same way. As can be seen, hypnotic highs have demonstrated their usual tendency to be more asymmetric than the general population. Strikingly, people abused as children showed extremely large differences between their left-right and right-left gaps; in fact in a few cases the gaps were even negative. In other words, in order for the LED on the 'quick' side *not* to be detected as coming first it was insufficient for the gap just to be very short: the flash actually had to come second. I have avoided saying which was the quick side, because there was some variability. The majority of abuse victims were fastest when the right-side LED (hence left hemisphere) was leading, which is the usual finding for hypnotic highs, but some showed a reverse pattern, which is like a high who is in hypnosis. Aside from handedness, which may have an influence, a plausible explanation is that these people were suffering from posttraumatic stress disorder. PTSD patients are known to be more than averagely hypnotisable⁴, and many show a more or less permanent bias towards the right hemisphere⁵.

The mindfulness group is interesting. There were too few tested to draw strong conclusions, but they seem to have an asymmetry at least as great as the hypnotic highs. However, there the similarity appears to end, because unlike the highs these meditators displayed faster acting right hemispheres. Incidentally, preliminary investigations suggest that mindfulness practitioners also 'switch sides' when they begin to meditate, so that they behave like mirror images of hypnotic highs. This is not entirely surprising, since several differences have been

found between hypnosis and mindfulness meditation⁶. Nevertheless, although seeming to be opposites, both hypnosis and mindfulness are known to be good vehicles for delivering some forms of therapy. What is not known, is whether people who do not respond well to one of these interventions do any better on the other. Given their mirror image quality, it is reasonable to hypothesise that those who do well with hypnosis would be relatively poor responders to mindfulness, and vice versa. If this proved to be the case we might imagine that, in the future, patients could be channelled towards the most effective treatment for them, on the basis of a brief temporal order test.

We now have two hypotheses to test. First, it has been suggested that temporal order judgments will indicate whether or not people are likely to respond well to hypnosis. Second, it is proposed that mindfulness will work well for people whose hemispheric patterns predict a poor response to hypnosis. The ideal study to test these hypotheses would take place in a large practice, where both mindfulness and hypnosis practitioners were available. It would perhaps be confined to patients with medically unexplained symptoms, a population that is difficult to treat conventionally, but likely to respond well to hypnotic intervention. A third person, independent of the two practitioners, would carry out pretesting, including an assessment of the patient's hemispheric asymmetry (not made known to the therapists). Patients would then be assigned randomly to one or other treatment and the outcomes assessed. That approach, with various refinements, would be the ideal, but there is no reason why different subsets of the study should not form small scale research projects. If anyone believes that they may be in a position to carry out such a study I would be very happy to develop equipment and offer advice as to the running of trials and data analysis.

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