

THE SCIENCE OF MEDITATION

If there was ever a time when meditation truly entered the mainstream it is now. There was certainly interest during the countercultural decades of the 60's and 70's. The Beatles had found a guru, and a whole plethora of holy men descended on western shores. The Beatles would later fall out with their Indian Guru amidst allegations of his sexual impropriety. A disillusioned Lennon later told his wife that he felt the Maharshi had, "too much interest in public recognition, celebrities and money for a spiritual man". Similar stories soon surfaced about a variety of spiritual con men. The meditation brand soon suffered, eliciting images of naive abandoned hippies being exploited by woolly bearded fraudsters. It was impossible to conceive then that meditation would be practised in boardrooms, with business men and women in their business suits. You can now be a meditator and live comfortably with the pursuit of career and all the worldly ambitions of high flying executives and business types.

What enabled this transition? A large part of the story is the secularization of meditation and the growing perception of its scientific merits.

In fact, you could be forgiven for thinking that the efficacy of meditation is pretty well established. There have been countless articles in the popular media about some newly discovered benefit of meditation. The truth is a little more complicated.

Meditation has been practiced for thousands of years. While it has cultural origins in ancient India, the practice has spread throughout the orient and is now well accepted in western countries amongst both consumers and health professionals.

I am a meditator myself and personally I'm convinced of its benefits. But my subjective feelings aside what does the science say? I had to answer this question when I began my studies into meditation for my Master's thesis with the University of Sydney.

To examine what the science says on the benefits of meditation we have to look at the literature. On examination of thousands of studies there emerges three fundamental hurdles to meditation research – first, the problem of

definition; second, the problem of mixed methods and third, the importance of active controls.

It is only once you grasp these fundamental issues with meditation that you will be able to determine if meditation works and what meditation methods are effective. Now before you go glass eyed on me, let me explain each of these issues in turn.

THE PROBLEM OF DEFINITION – What is meditation anyway?

It could be argued that the successful secularisation of meditation has allowed for broad acceptance, throwing off the smell of incense and the mental images of cultish guru's. Mindfulness is one such example – a secular version of Bhuddist and Zen meditation, but it was not the first.

In 1975 Herbert Benson an American cardiologist published *The Relaxation Response* an influential best-selling book describing meditation as the mental process that induced a set of physiologic responses such as decreased heart rate and blood pressure. His relaxation techniques were simpler secular versions of Transcendental Meditation, the predominant meditation technique at the time.

Benson was a pioneer in the demystification of meditation, he stripped transcendental meditation of its religious connotations. He was the first to secularise meditation and introduce it into the mainstream of the Western world; he introduced the term 'the relaxation response' as a scientific alternative to meditation. Benson was convinced that meditation had no unique or mystical qualities, it simply elicited a deep sense of relaxation.

Influenced by this definition the National Centre for Complementary and Alternative Medicine (a department of the National Institutes of Health) in the United States in 2006 defined meditation as 'a conscious mental process that induces a set of integrated physiological changes termed the "Relaxation Response"'.

This definition was later modified, informed by the emergence of research into the 'thoughtless awareness' model (more on this later); 'In meditation,

individuals learn to focus their attention and suspend the stream of thoughts that normally occupy the mind.’

The National Centre for Complementary and Alternative Medicine has again updated its definition of meditation moving away from the relaxation response and thought cessation description to a broader, more all-encompassing definition including clear influences from the mindfulness paradigm:

“[meditation is] a mind and body practice. There are many types of meditation, most of which originated in ancient religious and spiritual traditions. Some forms of meditation instruct the practitioner to become mindful of thoughts, feelings, and sensations and to observe them in a nonjudgmental way.”

The definition keeps shifting and is largely responsive to the most popular contemporary meditation technique. Today that is mindfulness. There are parallels today between the popularity of Benson's Relaxation Response method in the late 70's with the rise in popularity and prominence of the mindfulness technique. It too is a simpler secularised version of traditional meditation techniques (Buddhist) that have been innovated by Jon Kabat-Zinn. The mindfulness paradigm has as its central objective, moment to moment awareness of thoughts and feelings in a non-judgmental way. The current definition of meditation (largely influenced by the emergent popularity of mindfulness) has moved away from a more precise description to a very general one.

So what is meditation? Is it concentration? Relaxation? Mindfulness? Thoughtlessness? Is it all these things or none of them?

Meditation is described in many ways. This poses the first methodological problem for the scientist studying meditation. Its description. When I started studying meditation for my Master's thesis this was the first stumbling block. To get to the bottom of the description problem I began by examining some of the most ancient definitions of meditation.

In one of India's most ancient texts, the Mahabharata, which is at least as old as 400 BCE but probably older, meditation is described as follows: “He does not hear ... smell ... taste ... see ... or experience touch ... his mind ceases to imagine ... He desires nothing, and like a log **he does not think ...**” (13.294.16)

The Upanishads are a collection of texts that contain some of the central philosophical concepts of Hinduism and are some hundreds of years younger than the Mahabharata. Juan Mascaro, an eminent Sanskrit scholar and translator of Indian spiritual texts, summarises the Upanishadic ideas on meditation and consciousness as follows:

In the infinite struggle of man to know this world and the universe around him, and also to know the mind that allows him to think, he comes before the simple fact that life is above thought: when he sees a fruit he can think about the fruit but in the end he must eat it if he wants to know its taste: the pleasure and nourishment he may get from eating the fruit is not an act of thought. (Mascaro, 1965, pp. 1–47)

Mascaro’s authoritative translations of the Upanishads further illustrate this point. In the Kena Upanishad it is stated:

“He (God) comes to the thought of those who know him beyond thought, not to those who imagine he can be attained by thought: he is unknown to the learned and known to the simple (Mascaro, 1965, p. 51)”

Further, in the Kaushitaki Upanishad it is stated ‘It is not thought which we should know: we should know the thinker’ (Mascaro, 1965, p. 105).

Patanjali, a Vedic physician around 120 BCE synthesised the many disparate texts on yogic discipline into a single coherent practical guide for those aspiring to experience higher consciousness and self-realisation. In his writings he describes the clear objective of Yoga;

“Yoga is a voluntary inhibition of irrelevant mental activity” in which one can glimpse and expand on “the silent void moments pervading *the emptiness between thoughts*” (The Yoga Sutras of Patanjali, Shearer, 2010)

In the hatha yoga tradition the liberating experience of Samadhi (enlightenment) is the culmination of the whole training process wherein ‘... when the “great force”, i.e. kundalini is awakened, the life force dissolves and mental activity ceases’ (Swami Muktibodhananda Saraswati and Swami Satyananda Saraswati, 2000).

Again and again we come across descriptions such as these suggesting a very specific understanding of meditation, namely, thought cessation and negation.

The more I studied the ancient descriptions of meditation it became clear that the experience of thought cessation while being conscious and aware was the objective of meditation. Visualisation, physical postures and stretches, breathing exercises, hymns, chanting and focusing attention are all means to that end.

What is amazing is that despite thousands of studies examining various descriptions of meditation, this most ancient and authentic definition of meditation has only begun to be studied! Why is this so?

One possible reason is the very concept is antithetical to the western mind. The very word 'meditation' is described in the English dictionary as a process involving deep and concentrated thought. Ever since the enlightenment the West has largely hinged its identity on our thoughts. The Cartesian understanding of the mind does not accept that the self can exist without the thought, 'I think therefore I am'. The very idea of achieving complete mental silence is impossible and even disturbing to some. Does it mean we reach a zombie like state, leaving us vulnerable and susceptible? Who am I without my thoughts?

Another reason is that practitioners of this method do not charge any money and volunteer to provide free meditation classes. Without the commercial imperative to prove its effectiveness or market itself the available research into the thoughtless awareness meditation method has been carried out by interested students like myself and a small handful of researchers who believe in its potential benefits.

Whatever the reason it is unlikely that a definition of meditation will be settled on. But what is certain is that we should study the ancient methods of meditation that aim to achieve thoughtless awareness.

THE PROBLEM OF MIXED METHODS – Determining the active ingredient

Imagine I gave you a large vegetable smoothie and told you that drinking this delicious concoction daily had a variety of measurable health benefits. If you were an inquisitive scientist who wanted to study this miracle drink you might start by trying to figure out which of the ingredients gives us a health benefit. Is it the cucumber? The carrot? Or the beetroot?

When it comes to research this is an attempt to find the “active ingredient”. A large and growing number of meditation studies include a vast array of ingredients. For instance, the popular Mindfulness Based Cognitive Therapy (MBCT) and Mindfulness Based Stress Reduction (MBSR) include sitting mindfulness practices, active physical yoga poses and stretches, cognitive therapy, nature walks and psychoeducation. The challenge then is to determine which of these various ingredients is eliciting the benefit, or does it only work in conjunction with a variety of practices. In fact, recent systematic reviews of randomised control trials of MBCT and MBSR (Fjorback et al, 2011 & Van Dam et al, 2018) questioned whether mindfulness itself was the active ingredient;

‘... future research should primarily tackle the question of whether mindfulness itself is a decisive ingredient by controlling against other active control conditions or true treatments’. (Fjorback et al, 2011, p. 17)

I call these mixed method meditation studies and although the meditation is often touted as the “active ingredient” the truth is we don’t know yet whether it was the cucumber, the carrot or the beetroot that worked. This leads us to our final research challenge – the placebo effect.

SPECIFIC EFFECT – Is Meditation more than placebo?

If we wanted to prove that a meditation method really worked it is not enough for it to be simply tested against a control group. Let’s say we had one group do meditation and the other group just went about their normal lives. We tested and measured both groups. It would not come as much of a surprise that the meditation group would feel better. Why? One group felt actively engaged in treatment and the other did nothing. This kind of a control group is called ‘wait list control’. A fundamental part of experimental science is the importance of excluding non-specific effects when studying a phenomenon. Within the context of clinical research this means using strategies to control for the confounding factors that collectively contribute to ‘the placebo effect’ such as plausibility of the intervention, therapeutic contact, researcher expectations, patient expectations et cetera. So you can see how trials using strategies such as ‘wait list’ and ‘no treatment’ control groups are unlikely to

generate reliable findings. Yet almost half of the controlled trials and RCTs had used a wait list or no treatment control group! (Ospina, 2007)

What we really need to do is compare the meditation method we wish to study with a group that gets to do something like meditation – something that will elicit a ‘relaxation response’. This is what we call an ‘active control’. For example, we might have one group do mindfulness and the ‘active control group’ does cognitive therapy or relaxation exercises or yoga. So what happens when meditation is compared to an active control?

When active controls are applied researchers have found that the efficacy of one method over another has not been demonstrated. For example, Ospina and her colleagues (2007) noted that yoga was no better than mindfulness-based stress reduction at reducing anxiety in patients with cardiovascular diseases, relaxation response was no better than biofeedback in reducing blood pressure in hypertensive patients and Zen Buddhist meditation was no better than blood pressure checks in reducing systolic blood pressure in hypertensive patients.

However, a less known meditation method called Sahaja Yoga has begun to be studied and promisingly it has shown specific effects.

Why Sahaja Yoga meditation and the mental stillness method?

In the field of meditation research mindfulness has by far the most dominant body of research. It has exploded into the public awareness with best-selling colouring books and popular apps. Before mindfulness Transcendental Meditation had an equally prominent place in popular culture.

However, there are other forms of meditation that warrant exploration and are conceptually distinct from mindfulness. The Sahaja yoga method with its focus on mental silence is one such method.

As discussed earlier most mindfulness studies are mixed method and therefore the positive effects that can be ascribed to mindfulness are hard to ascertain and in need of further studies with methodological designs to address these weaknesses.

Sahaja Yoga meditation (SYM) is a sitting unimodal form of traditional meditation. Studies of mental silence oriented meditation, including some rigorous ones, have shown some evidence for a specific effect.

The results of more than a dozen years of scientific research here in Australia tells us that mental silence-orientated approaches to meditation are in fact both achievable and associated with specific benefits above and beyond those seen in non-mental silence approaches.

Take, for instance, a 2011 Meditation for Work Stress Study, involving 178 full-time Australian workers; it's one of the most thoroughly designed randomised controlled trials of meditation in the scientific literature. (Manocha, Black, Sarris & Stough, 2011).

Participants were randomly allocated to one of three groups: either Sahaja Yoga meditation, a relaxation-orientated intervention (a non-mental silence active control) or a no-treatment control group. Their stress, depressive feelings and anxiety levels were measured using scientifically validated measures before and after the eight-week program.

While people in both intervention groups improved, those in the mental silence group manifested significantly greater improvements than the relaxation group and the no-treatment group. This suggests that there is something more than the 'relaxation response' happening in the Sahaja Yoga group. The benefits of the mental silence experience are something more profound than mere relaxation.

A randomised controlled trial of meditation for asthma sufferers mirrored these findings by comparing mental silence-orientated meditation to a stress management programme promoted by the state department of health. Not only were the psychological improvements significantly greater in the meditation group but there was also a reduction in the irritability of the airways. (Manocha, Marks & Kenchington et al, 2002)

Other larger surveys as well as smaller trials also demonstrate promising outcomes – all pointing toward the idea that mental silence is the key defining feature of meditation, responsible for effects specific to meditation and beyond simple relaxation. What's more, the research into this area suggests that practitioners that regularly achieve thoughtless awareness have better mental health than the general population and furthermore there is a positive

correlation between how regularly you achieve this state and your mental health and wellbeing (Manocha et al., 2012).

Brain studies report some interesting findings too. First, the experience is associated with a characteristic pattern of brain electrical activity – increased alpha-theta activity at the front and top of the brain along the midline. This is associated with reduced anxiety and improved attentional focus. (Aftanas & Golosheykin, 2001)

There was also a strong correlation between these objectively measured electrical changes and the subjective experience of the quality of the meditation experience.

Second, meditators exhibit reduced stress responses in the brain compared with non-meditators. This implies that the benefits are occurring at a neurophysiological level rather than being just a suppression of emotion or of its peripheral features. (Aftanas & Golosheykin, 2005)

Meditators, therefore, seem to be fundamentally modifying the way they generate negative emotions in response to the environment.

Conclusion

Before you are convinced of the efficacy of a meditation technique check to see if the study has avoided the pitfalls of mixed method or lack of an active control group. It is largely because of these two methodological flaws that despite research into meditation for over 40 years and more than 3000 published papers, most meditation methods have failed to demonstrate effects beyond placebo. It is time to examine other meditation methods. Sahaja Yoga meditation and the mental silence method shows promise and warrants further research in to its unique benefits. Returning to the study of the most ancient definition of meditation may finally provide more conclusive evidence for the unique benefits of meditation.

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