

Replicating the Effects of Mindfulness Meditation on The Attention Network Test

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Background and objectives:

If meditation is a type of attentional training, its effects should be detectable by measuring attention (Lutz, Slagter, Dunne, & Davidson, 2008). Evidence to support this claim comes from studies which demonstrate effects of mindfulness meditation on the Attention Network Test (ANT). The ANT (Fan et al., 2002) is a simple computer task, designed to distinguish between three attentional networks; alerting, orienting and executive attention. Four studies were conducted with the aim of replicating effects of meditation on the ANT. Two studies trained non-meditator participants for 4 weeks in focussed attention meditation (FAM), and compared ANT performance against untrained participants. A third study compared ANT performance in experienced meditators who did 15 minutes of FAM, with those who did a 15 minute reading task. This design was replicated in the fourth study, using non-meditators in place of experienced meditators.

Methods:

In addition to the ANT, all studies used breath counting as a validated means of both inducing, and measuring state mindfulness (Levinson et al., 2014). State mindfulness was measured using the State Mindfulness Survey (Tanay & Bernstein, 2013). Trait mindfulness was measured using the Five Facet Mindfulness Questionnaire (Baer et al. 2008). The reading control task was adapted from the mind-wandering literature (Sayette et al., 2009).

Results:

In the first study, attentional orienting improved significantly after FAM training compared with the waitlist control ($p = .03$). However, in the replication of this study, although orienting was better in the FAM trainees, the difference with the control group was not significant. In experienced meditators, attentional orienting was significantly better after FAM compared with the reading control condition ($p = .05$). Data from study 6 is awaiting analysis, and will be reported in this presentation.

Discussion and conclusion:

The effects of meditation on the ANT may be small and, therefore only detectable reliably with with larger sample sizes. Furthermore, MacLeod et al. (2010) have questioned the psychometric and theoretical properties of the ANT, so alternative measures could be more appropriate for testing the effects of meditation on attention.