



## “Adults with ADHD and parents of children with ADHD”

Day: Friday 13th July 2018      Time: 10:45 – 12:00      Track: Clinical Applications

About 3-4 percent of adults suffer from Attention Deficit Hyperactivity Disorder (ADHD). Consistent with children with ADHD, those adults with ADHD have significant impairments, including disorganization, restlessness, irritability, and sleeping difficulty. At least 20-30 percent of the population does not respond to the medication and compliance is worse than children with ADHD. This symposium focuses on advancing our understanding of adult ADHD, including mind wandering as a possible target of mindfulness-based programme, and effects of mindfulness on working memory deficits. Two other intervention studies investigated the effects of mindfulness-based cognitive therapy on adult ADHD, and the effects of mindful yoga on children with ADHD and their parents.

### Symposium overview

- Presenter 1**      **Lotte Janssen** - Mindfulness Based Cognitive Therapy (MBCT) versus treatment as usual (TAU) in adults with attention deficit hyperactivity disorder (ADHD)
- Presenter 2**      **Philip Asherson** - Mind Wandering in Adults with attention-deficit/hyperactivity disorder (ADHD): a new perspective on ADHD, and a target for mindfulness training
- Presenter 3**      **Dirk Geurts** - Mindfulness based cognitive therapy increases flexibility of working memory in attention deficit hyperactivity disorder
- Presenter 4**      **Herman Lo** - The effects of family partner mindful yoga on ADHD symptomology in young children and their parents: A pilot randomized control trial
- Chair:**              *Philip Asherson*



## Mindfulness Based Cognitive Therapy (MBCT) versus treatment as usual (TAU) in adults with attention deficit hyperactivity disorder (ADHD)

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**Background and objectives:** Adults with ADHD often present with a lifelong pattern of core symptoms that is associated with impairments of functioning in daily life. This has a substantial personal and economic impact. In clinical care there is a high need for evidence-based psychosocial treatments to offer alongside the usual treatments. MBCT is an innovative psychosocial treatment for adult ADHD. This trial examined the efficacy of MBCT+TAU versus TAU in reducing core symptoms in adults with ADHD.

**Methods:** A multicentre, single-blind, randomised controlled trial. Participants were randomly assigned to MBCT+TAU (n=60), an 8-weekly group therapy including meditation exercises, psychoeducation and group discussions, or TAU only (n=60), which reflected usual treatment in the Netherlands and included pharmacotherapy and/or psychoeducation. Primary outcome was ADHD symptoms rated by blinded clinicians. Secondary outcomes included self-reported ADHD symptoms, executive functioning, mindfulness skills, self-compassion, positive mental health and general functioning. Outcomes were assessed at baseline, post-treatment, 3 and 6 months follow-up. Post-treatment effects at group and individual level, and follow-up effects were examined.

**Results:** In MBCT+TAU participants a significant reduction of clinician-rated ADHD symptoms was found at post-treatment (M difference=-3.44[-5.75, -1.11], p=0.004, d=0.41). This effect was maintained until 6-months follow-up. More MBCT+TAU (31%) than TAU participants (5%) showed a reliable improvement of ADHD symptoms (p=0.001). MBCT+TAU participants compared to TAU participants also reported significant improvements in ADHD symptoms, mindfulness skills, self-compassion and positive mental health at post-treatment, which were maintained until 6-month follow-up. Although participants in MBCT+TAU compared to TAU reported no improvement in executive functioning at post-treatment, they did report improvement at 6 month follow-up.

**Discussion:** Overall, this RCT demonstrated that MBCT has significant benefits to adults with ADHD up to 6 months after post-treatment, with regard to both ADHD symptoms and positive outcomes. So far, research on the consolidation of treatment effects of psychosocial interventions in adults with ADHD is scarce, although highly relevant for clinical practice to complement the shortcomings of pharmacotherapy as a standalone treatment.

**Conclusion:** MBCT might be a valuable treatment option alongside TAU for adult ADHD aimed at alleviating symptoms.



## **Mind Wandering in Adults with attention-deficit/hyperactivity disorder (ADHD): a new perspective on ADHD, and a target for mindfulness training**

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Background: ADHD is a common neurodevelopmental disorder affecting 5-6% of children and 3-4% of adults. ADHD is often accompanied by emotional lability, cognitive performance deficits, and comorbid mental health problems; but is also seen in individuals with high levels of function and creativity.

Objectives: ADHD is defined by trait-like symptoms that reflect inattentive, hyperactive and impulsive behaviours. However, we and others have found that subjective reports of spontaneous mind wandering (MW) are strong predictors of ADHD. We propose a new perspective on ADHD, in which aberrant regulation within the default mode network (DMN), and between DMN and executive control networks, leads to excessive and poorly regulated MW, which in turn leads to the symptoms and impairments of ADHD. This may reflect the mechanism by which mindfulness reduces core ADHD symptoms.

Method: Outline of theoretical model.

Results: Adults with ADHD describe a distractible mental state: ceaseless mental activity, thoughts that jump and flit, and multiple lines of thought at the same time. These trait symptoms are captured using the Mind Excessively Wandering Scale (MEWS), which is strongly associated with ADHD. We found MEWS scores to be a stronger predictor of impairment than ADHD symptoms scales. Both MW and ADHD are linked to regulation of DMN activity, and in ADHD there is dysregulation of the interactions between DMN and executive control networks. Furthermore, mindfulness training appears to reduce core ADHD symptoms in adult ADHD, with comparable effects to stimulant medication. This is of interest since mindfulness training enhances regulation of the same neural mechanisms that underlie ADHD and the regulation of mind wandering.

Conclusions: We propose this as a promising new avenue for research as excessive spontaneous-MW is linked to ADHD, and ADHD-associated impairments. Further, unlike ADHD symptoms such as inattention, MW can be measured using a range of direct and indirect measures including rating scale trait measures, experience sampling in daily life, experience sampling during experimental paradigms, and the established neural correlates of MW. Potentially these provide new clinical and neural-biomarkers of ADHD, and highlight the value of interventions that target the regulation of MW in ADHD such as mindfulness training.



## **Mindfulness based cognitive therapy increases flexibility of working memory in attention deficit hyperactivity disorder**

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Background: Attention deficit hyperactivity disorder (ADHD) is associated with deficits in working memory. Methylphenidate (MPH) is used to treat ADHD and has been shown to modify working memory in such a way that it improves distractor resistance but impairs flexible updating of working memory. Mindfulness based cognitive therapy (MBCT) on top of treatment as usual (TAU) has recently been shown to be more effective in reducing ADHD symptoms, compared with just treatment as usual (TAU). It is however unclear whether and how MBCT affects working memory in patients with ADHD.

Aim: To assess the effects of MBCT on distractor resistance on the one hand and flexible updating of working memory on the other hand in ADHD patients.

Methods: Within the framework of a randomised clinical trial we assessed 35 ADHD patients before and after 8 weeks of TAU in combination with or without MBCT. We employed a delay match-to-sample task in which participants were instructed to remember a target set of two coloured shapes. We then measured accuracy on trials that either required to resist a distractor (Ignore condition) or to update the target set with the novel stimuli (Update condition) and on trials without presentation of novel stimuli (No Interference condition).

Results: As expected baseline ADHD symptomatology was related to general accuracy. When controlling for baseline ADHD symptomatology, a significant interaction between Day, Treatment Group and Condition was revealed. Interpretation of this interaction was complicated by unexpected pre-treatment Group differences on especially the Ignore and No Interference conditions. There were however no significant pre-treatment differences for the Update condition. Selectively assessing the Update condition revealed in the MBCT + TAU (p.1), an increase in Update accuracy (Treatment Group x Day(pre/post treatment):  $F(1,31)=5.0$ ,  $p<.05$ ).

Conclusion: Data suggest that MBCT enhances flexible updating on working memory in adults with ADHD. No conclusions could be drawn about MBCT effects on distractor resistance. Limitations of and future outlooks from this study will be discussed.



## **The effects of family partner mindful yoga on ADHD symptomology in young children and their parents: A pilot randomized control trial**

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**Background and objectives:** In Hong Kong about 4 percent of the school aged children has been diagnosed as having Attention Deficit and Hyperactivity Disorder (ADHD). Some parents reserved to give medications for managing their children's ADHD symptoms due to their concerns about possible side effects. While mindfulness-based program has provided initial evidences in improving attention and emotional regulation to children with ADHD, there are concerns about the sustainability of non-pharmacological treatments. Mindful Yoga promotes relationship quality, increased communication and trust, and reduced interpersonal stress that may help to reduce the symptoms of children with ADHD and their parents. The aim of the study is to investigate the feasibility of a family partner mindful yoga intervention in improving children with inattention and hyperactivity symptoms.

**Methods:** A total of 48 dyads of children with diagnosis or ADHD symptoms aged 5 to 7 years and their parents were randomly assigned to a family partner mindful yoga intervention (n = 25) or a wait-list control group (n = 23). The family partner mindful yoga program had six sessions and each lasted for one and a half hour.

**Results:** Based on the 27 dyads who completed their intervention in 2017, children from intervention group had marginally greater improvement in children's emotionally reactive behaviours ( $F = 3.98$ ,  $a = .06$ ), and significant improvement in response time in Attention Network Test (ANT) ( $F = 4.76$ ,  $p = .04$ ). Parents from intervention group had marginally greater improvement in interpersonal mindfulness ( $F = 2.29$ ,  $p = .14$ ). Final results of the study will be available at the time of conference.

**Conclusion:** The results of this pilot study have provided initial evidence of the family partner mindful yoga programme as a complimentary treatment option to ADHD. Implications and limitations of the study will be further discussed.