Mindfulness Training in High Demand, Time-Pressured Real-World Settings: The Good, the Bad, and the Ugly

Amishi P. Jha

The science and practice of mindfulness-based interventions has witnessed exponential growth in recent years with applications in diverse settings, including healthcare, education, the workplace, sports, and the military. Such expansion raises complex and engaging question. This lecture will discuss efforts to offer short-form mindfulness training programs contextualized for various high-demand, time-pressured groups. Three key questions will be discussed. 1) What are the key cognitive vulnerabilities in such groups? 2) Is short-form mindfulness training protective against these vulnerabilities? 3) If so, how can training delivery be made both scalable and sustainable? Our ongoing results suggest that there is promise. Yet, considerable challenges remain regarding research and implementation. Possible solutions will be discussed.
The Impact of Mindfulness Training and At-home Practice on Attentional Performance in Firefighters

University of Miami

Mindfulness training (MT) can strengthen cognitive resilience in military cohorts over high-demand intervals. Herein, we evaluate the feasibility and efficacy of MT in firefighters, who face similar high-demand situations over protracted time intervals. Firefighters (N=121) were assigned to an MT program (n = 42), an active comparison relaxation training program (RT, n = 31), or served as no-training waitlist controls (WLC, n = 48). Both the MT and RT were contextualized for the firefighter context and consisted of 4, 2-hour training sessions delivered over 4 weeks by the same expert trainer as well as 10-15 minutes of assigned daily at-home practice. MT and RT participants were to submit daily practice logs and provide feedback regarding the training and trainer after the end of the training. The majority of MT and RT participants who completed the study returned their practice logs, strongly agreed that the training was useful, and rated the trainer’s performance as exceptional. Attentional performance was tested in all participants via the sustained attention to response task before (T1) and after (T2) the 4-week training interval. Repeated-measures ANOVA did not reveal significant time (T1, T2) by group (MT, RVT, WLC) interaction on attentional performance. However, regression analyses with at-home practice time as a regressor revealed that the greater the amount of practice, the more attentional performance improved (from T1 to T2) in MT, but not RT. These findings highlight the key role of mindfulness practice in achieving attentional benefits.
A Comparison of Two Cognitive Training Smartphone Applications on Working Memory and Mind Wandering over the Academic Semester

Slavin, L.E., Denkova, E., Zanesco, A.P., Raja, N., Chichester, K., & Jha, A.P.

University students face arduous demands over the semester. They must work effectively to maximize their cognitive performance and minimize mind wandering (MW). Mindfulness training (MT) may improve cognitive performance and reduce MW. The present study evaluated the effectiveness of two smartphone-based training applications. Students were randomly assigned to an MT program (Headspace, n=27) or a cognitive game-based training program (Lumosity, n=25). Cognitive performance (accuracy, % correct) and MW (indexed by self-reported probe responses) were assessed in a working memory task at the middle (T1) and end (T2) of the semester. Repeated measures ANOVA found that while the groups did not differ at T1, the Lumosity group declined in accuracy and reported more MW from T1 to T2 (~45 days), whereas the Headspace group did not change over time. These results suggest that app-based MT may protect against cognitive degradation over high-demand academic intervals in students.
Mindfulness Training Influences Sustained Attention: Attentional Benefits as a Function of Training Intensity

Witkin, J. E., Zanesco, A. P., Denkova, E., Carpenter, J., & Jha, A. P.

Mindfulness training (MT) has been shown to improve attention. Two experiments investigated the influence of MT on sustained attention performance ($A'$) measured in 3, 313-trial blocks of the Sustained Attention to Response Task (SART) and analyzed using Hierarchical Linear Modeling. In Experiment 1, MT practitioners were tested before (T1) and after (T2) a 1-month retreat (N=57), and were compared to age-matched no-training controls (N=32). At T2, $A'$ was higher in the MT vs. control group across all blocks. In Experiment 2, participants were tested before (T1) and after (T2) an 8-week MT (N=32) or Nutrition Education (NE) program (N=33). $A'$ increased for the MT group from T1 to T2, but only for the first block. There were no differences over time or between groups for the remaining two blocks. Results suggest that while MT may improve attention, the magnitude of benefits may vary with MT intensity and duration.
Mindfulness-Based Attention Training (MBAT) in Active Duty Military Cohorts: A Meta-analysis of Protective Effects on Sustained Attention and Working Memory

Zanesco, A. P., Witkin, J. E., Denkova, E., Chichester, K., Gonzales, S., Rogers, S. L., & Jha, A.P.

Military servicemembers are vulnerable to cognitive decline as they face protracted demands across their military careers. Mindfulness training (MT) has been proposed to bolster cognitive resilience – the ability to maintain imperiled cognitive capacities. We conducted a meta-analysis of three longitudinal studies investigating the efficacy of a novel short-form (8-hours over 4-weeks) MT program, called Mindfulness-Based Attention Training (MBAT). Active duty US Military cohorts were assigned to either receive MBAT or serve as no-training controls (NTC). Soldiers were assessed on the Sustained Attention to Response Task (SART; N=280) and a delayed-recognition working memory (WM; N=282) task before (T1) and after (T2) MBAT. Random effects meta-analysis indicated a small but significant difference in standardized mean change (SMC) between MBAT and NTC groups for working memory accuracy (ΔSMC=0.35, 95% CI [0.08,0.62]) but not SART performance (ΔSMC=0.11, 95% CI [-0.11,0.33]). These findings support the supposition that MBAT protects soldiers’ performance relative to non-training controls.