Introduction

Mindfulness is “paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145). Multi-component mindfulness trainings demonstrably foster various psychological functions, but less is known about contributions of individual components, such as different mindfulness exercises.

Goal: To investigate active ingredients of mindfulness training in terms of the incremental value of yoga within mindfulness training in respect of cognitive effects by comparing:
• Mindfulness training including yoga (MYT)
• Mindfulness training excluding yoga (MT)
• Awareness training (active control)
• No treatment (passive control)

Hypotheses: Considering attention regulation as core component of mindfulness, we expected that
• Mindfulness training results in greater gains in cognitive performance than awareness training (active control group) and no training (passive control group).
• Including yoga in mindfulness training is not associated with an extra gain in cognitive performance.

Method

Design and Interventions

<table>
<thead>
<tr>
<th>Group</th>
<th>T1</th>
<th>Treatment over 1 semester</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MYT</td>
<td>Pretest</td>
<td>Mindfulness training incl.</td>
<td>Posttest</td>
</tr>
<tr>
<td>(n=60)</td>
<td>sitting meditation,</td>
<td>scan, yoga</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>Pretest</td>
<td>Mindfulness training incl.</td>
<td>Posttest</td>
</tr>
<tr>
<td>(n=44)</td>
<td>sitting meditation,</td>
<td>scan</td>
<td></td>
</tr>
<tr>
<td>Active control</td>
<td>Pretest</td>
<td>Phenomenological training</td>
<td>Posttest</td>
</tr>
<tr>
<td>(n=45)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passive control</td>
<td>Pretest</td>
<td></td>
<td>Posttest</td>
</tr>
<tr>
<td>(n=31)</td>
<td></td>
<td></td>
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</tbody>
</table>

Participants: 180 university students (age: mean=24.92, SD=3.53; gender: 38.33% male)

Dependent Measures

• Sustained attention: d2-R (Brickenkamp et al., 2010)
• Cognitive flexibility: Number-letter task (Rogers & Monsell, 1995)
• Cognitive inhibition: Flanker task (Eriksen & Eriksen, 1974)
• Data-driven information processing: among others recognition of prototypical faces (adapted from Solso & McCarthy, 1981)

Results

General approach for analyses:
• Linear mixed-effects modeling
• Contrasts: passive control vs. mindfulness training, passive control vs. active control, MT vs. MYT
• Predictors: participant, gender, time (pre vs. posttest), group (passive control vs. active control vs. MT vs. MYT), interaction of time with group
• Graphs display results of selected dependent measures and are accompanied by significant contrasts.
• Moderation analyses showed that results were not affected by practice time.

Passive control vs. mindfulness training:
- Cognitive inhibition: Flanker task
  - Early: b = 7.72, t(173) = 2.00, p = .05, r = .02
  - Late: b = 3.41, t(173) = 2.07, p = .04, r = .02

Passive control vs. MT:
- Cognitive flexibility: Number-letter task
  - Early: b = -18.04, t(171) = -1.96, p = .05, r = .02

Conclusions

• There is tentative support for the hypothesis that mindfulness training is accompanied by improved cognition in terms of sustained attention, cognitive flexibility, and data-driven information processing.
• As expected, including yoga in mindfulness training is not associated with an extra gain in cognitive performance.
• Results confirm our prediction that improving cognitive functions requires systematic attention training as provided in meditation and bodyscan.

References


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