

Meditation Experience and Behavioral Indicators of Mindfulness: Evidence from the Mindful Awareness Task

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Background

- Self-report measures alone may not fully capture mindfulness as it unfolds during meditation practice.
- Recall biases and demand characteristics limit the validity of questionnaire-based mindfulness assessment.
- Behavioral indicators are needed to assess mindfulness-related processes as they occur in real time during meditation.
- The Mindful Awareness Task (MAT; Hadash et al., 2022) measures the objects and temporal dynamics of mindful awareness during a 20-minute meditation session, producing nine behavioral indices.

Objective

To examine whether MAT behavioral indices differ according to prior meditation experience in middle-aged and older adults from the WASEDA’S Health Study.

Participants

WASEDA’S Health Study
| Adults aged ≥40 years | N = 312

Group	n	%
With prior meditation experience	69	22.1%
Without prior meditation experience	243	77.9%
Total	312	—

ACBS Relevance

This study contributes to the behavioral measurement of mindfulness processes beyond self-report and may support process-based research within contextual behavioral science.

Methods

Task

- 20-minute breath-focused meditation session (MAT; Hadash et al., 2022)
- Key press → each time participants notice their inhalation or exhalation (breath awareness)
- Verbal label → any other experience drawing attention (e.g., “warm,” “worried,” “aching”)

Grouping Variable

- Prior meditation experience (yes vs. no)

Statistical Analysis

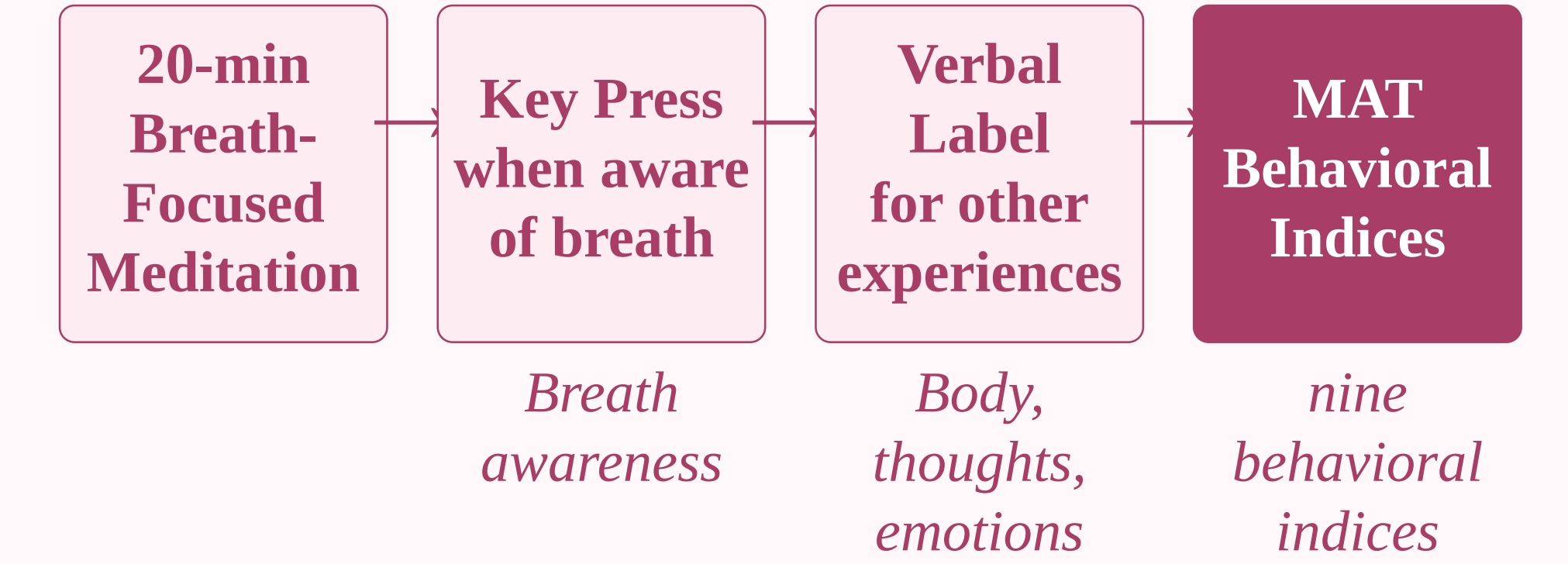
- Exploratory Wilcoxon rank-sum tests (nonparametric two-group comparison)
- Cross-sectional comparison of MAT indices between groups

Mindful Awareness Task (MAT)

The MAT measures two key dimensions of mindful awareness during meditation: the objects and temporal dynamics of mindful awareness (Hadash et al., 2022).

Objects of Mindful Awareness	Temporal Dynamics
Body · Mind · Thoughts Pleasant · Unpleasant	Duration of mindful and mindless states

Task Procedure:



MAT Index Definitions

Category	Index	Definition
Temporal	MA Time	Total duration of mindful states (s)
	Sustained MA ★	Mean mindful sequence duration (s)
	Latency to MA	Mean mindless sequence duration (s)
Objects	Meta-Awareness ★	Non-breath awareness count
	MA of Body ★	Bodily sensation reports
	MA of Mind	Mental event reports (thoughts, emotions)
	MA of Thoughts	Thought process reports
	MA of Pleasant	Pleasant experience reports
	MA of Unpleasant	Unpleasant experience reports

★ Higher in prior-experience group in exploratory tests ($p < .05$, uncorrected)

Key Results

In exploratory Wilcoxon rank-sum tests, three MAT indices were higher in participants with prior meditation experience ($n = 69$) vs. without ($n = 243$):

Object Index

MA of Body

Bodily sensation reports

Z = 2.39 $p = .017$ *

↑ Higher in prior-experience group

Object Index

Meta-Awareness

Non-breath awareness count

Z = 2.30 $p = .021$ *

↑ Higher in prior-experience group

Temporal Index

Sustained Mindful Awareness

Mean mindful sequence duration (s)

Z = 2.01 $p = .045$ *

↑ Higher in prior-experience group

Exploratory Wilcoxon rank-sum tests; cross-sectional comparison; *p-values not adjusted for multiple comparisons.*

Discussion

- These preliminary, cross-sectional findings suggest that MAT indices may be sensitive to prior meditation experience — particularly for bodily awareness, meta-awareness, and sustained mindful awareness.
- Cross-sectional design: observed differences should not be interpreted as causal effects of meditation. Prior experience was not randomized.
- The MAT may complement self-report measures in process-based mindfulness research by capturing within-session awareness processes not easily assessed by questionnaires.
- Findings may contribute to the behavioral assessment of mindfulness-related processes and individual differences in mindful awareness.

Limitations & Future Directions

- Cross-sectional design; prior experience was not randomized; causal inference is not possible.
- Experience was coded binary (yes / no); amount, type, and regularity of practice were not examined.
- Future longitudinal and experimental studies are needed to examine training-related changes in MAT indices.
- Extension to diverse and clinical populations is warranted.

Ethics

Approved by the Waseda University Ethics Committee (No. 2021-121). Informed consent was obtained from all participants.

Disclosure

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Reference

Hadash, Y., Ruimi, L., & Bernstein, A. (2022). Looking inside the black box of mindfulness meditation: Investigating attention and awareness during meditation using the Mindful Awareness Task (MAT). *Psychological Assessment*. <https://doi.org/10.1037/pas0001194>