

Review Article

Rethinking Practice in Mindfulness-Based Interventions: A Developmental Theoretical Model Integrating Formal Practice, Informal Practice, Practice Quality, and Dispositional Mindfulness

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Research on mindfulness-based interventions (MBIs) has consistently framed home practice as a central therapeutic ingredient. Nevertheless, the empirical literature remains heterogeneous with regard to the amount of practice participants complete, the strength and consistency of associations between practice time and outcomes, and the relative contribution of formal versus informal practice. At the same time, a growing body of evidence suggests that practice quality and dispositional mindfulness may help explain why equivalent amounts of practice do not yield equivalent outcomes across participants.

In this theoretical article, I argue that research on MBI practice has been constrained by an overly static and linear dose–response model. I propose a developmental framework in which different dimensions of practice play distinct functional roles across phases of training. Specifically, formal practice is hypothesized to be particularly important during the early stages of training, when participants are acquiring foundational capacities such as attentional stability, meta-awareness, and nonreactivity. As these capacities consolidate and dispositional mindfulness increases, the therapeutic relevance of informal practice and the quality with which mindfulness is enacted is proposed to become progressively more central to the maintenance and generalization of benefits.

This model integrates findings from meta-analyses on home practice and dispositional mindfulness, empirical studies focusing on informal practice, and emerging research on practice quality. It offers a parsimonious explanation for the mixed findings in the literature on practice dose: practice may

matter, but not uniformly, not linearly, and not in the same way across phases of training. The article concludes by outlining testable hypotheses and a research agenda for longitudinal and mechanism-focused studies, including those conducted in contextualized programs such as Mindfulness-Based Health Promotion.

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Introduction

Mindfulness-based interventions (MBIs) are now established across clinical, educational, and community settings, with broad evidence supporting beneficial effects on stress, anxiety, depressive symptoms, well-being, and quality of life^[1]. Yet one of the field's most persistent conceptual and practical questions remains unresolved: what role does mindfulness practice actually play in producing and maintaining these benefits?

Standard MBI pedagogy emphasizes between-session practice, especially formal meditation, as a core mechanism of change. However, empirical findings are less straightforward than this pedagogical consensus might suggest. A major meta-analysis of home practice in Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) found a positive but modest association between formal home practice and outcomes, with participants completing less practice than commonly prescribed on average^[2]. A subsequent systematic review likewise concluded that the utility of home practice is likely meaningful but methodologically heterogeneous and insufficiently understood^[3].

This heterogeneity raises a deeper theoretical issue. The dominant discourse often assumes a relatively simple dose-response model: more formal meditation should lead to better outcomes. But this assumption may be incomplete. Studies separating formal from informal practice suggest that informal mindfulness may show stronger associations with long-term maintenance, well-being, and generalization to daily life in at least some samples^{[4][5][6]}. Meanwhile, emerging work on practice quality suggests that the effects of practice time may depend on whether practice is actually being enacted with awareness, receptivity, and a capacity to return from distraction^{[7][8][9]}. Finally, meta-analytic evidence indicates that mindfulness training changes self-reported dispositional mindfulness and that these changes are associated with psychological improvement^[10].

Taken together, these findings suggest that “practice” in MBIs should not be treated as a single, static quantity. Rather than asking whether practice matters in general, a more informative set of questions may be: which types of practice matter, for whom, at what stage of training, and through which mechanisms?

In this paper, I propose a theoretical reframing. Rather than asking whether practice matters in general, I argue that we should ask which kind of practice matters, for whom, at what stage of training, and through which mechanisms. Specifically, I propose that formal practice may be especially important early in training, when participants are still developing core attentional and metacognitive capacities. As these capacities consolidate and dispositional mindfulness increases, the relative importance of practice may shift toward informal mindfulness in daily life and toward the quality, rather than sheer quantity, of ongoing practice. This developmental model may help explain why the literature on practice dose has produced mixed results and may offer a more clinically useful framework for research and implementation.

Beyond a Static Dose–Response View of Practice

The intuitive appeal of a dose–response model is understandable. Formal mindfulness practice is visible, prescribed, and relatively easy to quantify in minutes or sessions. Instructors often encourage regular meditation as a way to strengthen attentional stability, emotional regulation, and familiarity with present-moment experience. But ease of measurement should not be mistaken for theoretical sufficiency. The finding that formal home practice is associated with better outcomes on average does not establish that this association is linear, uniform across participants, or stable across time. Indeed, the meta-analytic estimate reported by Parsons et al.^[2] was modest, not large, and the broader methodological review by Lloyd et al.^[3] underscored substantial variability in how practice was measured, reported, and analyzed.

The field may therefore have conflated two distinct propositions: first, that formal practice is useful; and second, that increasing formal practice in a quasi-linear manner is the principal route to better outcomes. The first proposition is broadly supported. The second is far less certain. In behavioral and contemplative interventions alike, active ingredients can change their functional role over time. A component that is essential during skill acquisition may become less central once the skill is embodied, automatized in a beneficial way, or generalized to real-life contexts. This logic is familiar from psychotherapy,

rehabilitation, and health behavior change. There is little reason to assume that mindfulness practice should be exempt from such developmental dynamics.

Formal and Informal Practice as Functionally Distinct Processes

One source of confusion in the literature is the tendency to group all mindfulness practice together. Formal practice and informal practice are not interchangeable. Formal practice typically involves dedicated periods of meditation, movement, or body-based attention. Informal practice involves intentionally bringing mindful awareness into everyday activities, interpersonal exchanges, emotional triggers, and moments of stress. The latter is closer to the applied, ecological expression of mindfulness in real life.

This distinction matters empirically. Morgan et al.^[6] found that, following an acceptance-based behavioral therapy for generalized anxiety disorder, informal mindfulness practice was significantly related to continued beneficial outcomes at follow-up, whereas formal practice was not significantly associated with the maintenance of gains. Birtwell et al.^[4], in a large exploratory study, found that informal mindfulness practice was related to positive well-being and psychological flexibility, while the duration of formal practice showed weaker and less consistent associations. In a more recent chronic pain pilot, Brintz et al.^[5] again found that informal, but not formal, home practice quantity was associated with multiple improved outcomes. Kakoschke et al.^[11] similarly reported that informal practice showed stronger relations than formal practice for some outcomes in a medical student sample. These studies do not invalidate the role of formal meditation, but they do suggest that informal practice may be especially important for transfer and maintenance.

A theoretical implication follows. Formal practice may be best understood as a training context in which foundational capacities are cultivated under relatively protected conditions. Informal practice, by contrast, may reflect successful transfer: the ability to recruit mindful awareness when it matters in daily life. If this is correct, then an overemphasis on formal practice minutes may obscure the more clinically relevant question of whether participants are becoming more capable of enacting mindfulness outside meditation sessions.

Practice Quality as the Missing Mechanism

A second major limitation of the current literature is its focus on quantity over quality. Two participants may report identical practice durations while engaging in profoundly different experiential processes. One may be mechanically “getting through” the exercise while remaining absorbed in rumination or self-criticism; another may be practicing with greater meta-awareness, nonjudgment, and responsiveness to distraction. If so, then practice time alone is a relatively crude proxy for the process that is hypothesized to produce change.

This concern is supported by the emerging literature on practice quality. Del Re et al.^[7] showed that practice quality may be more informative than the amount of practice in predicting later psychological functioning. Goldberg et al.^[9] later extended this line of work, reporting evidence that a brief practice-quality measure was reliable and valid and that greater practice time was associated with improved practice quality; crucially, improved practice quality mediated the relation between practice time and outcomes in MBSR. In effect, time appears to matter, at least in part, because it can support better-quality practice. But time is not the mechanism itself.

This insight may be one of the most important conceptual advances for the next phase of MBI research. It allows us to reinterpret mixed findings on practice dose not as evidence that practice is irrelevant, but as evidence that the field may often be measuring the wrong level of the process. If practice quality is the more proximal mechanism, then the variable of interest is not simply whether participants practiced, but whether they increasingly learned to relate differently to thoughts, emotions, bodily sensations, and automatic reactions during practice itself.

Dispositional Mindfulness as a Developmental Marker

A third piece of the puzzle is dispositional mindfulness. Although self-report mindfulness measures remain debated, they are widely used, psychometrically established, and responsive to mindfulness training. The Five Facet Mindfulness Questionnaire (FFMQ), derived from the factor analysis of several mindfulness measures, remains one of the most influential instruments in this domain^{[12][13]}. Meta-analytic evidence by Quaglia et al.^[10] found that mindfulness training produces small-to-moderate improvements across several dimensions of self-reported dispositional mindfulness, and that changes in these dimensions are associated with beneficial changes in mental health outcomes.

Support for a more differentiated understanding of dispositional mindfulness also comes from observational work showing that meditation practice is not uniformly associated with all mindfulness facets. Soler et al.^[14], in a cross-sectional study of 670 participants, found that meditation experience was more strongly associated with the FFMQ facets of Observing and Non-Reactivity, moderately associated with decentering, and less strongly associated with Non-judging, Describing, and Acting with Awareness. Importantly, the frequency of practice and lifetime practice were more strongly related to mindfulness scores than session length, suggesting that the relationship between practice and dispositional mindfulness may be shaped more by continuity and repeated engagement than by the sheer duration of individual sessions. These findings are consistent with the view that formal practice may first strengthen a subset of mindfulness-related capacities, while broader everyday embodiment may depend on later generalization processes.

For the purposes of the present model, dispositional mindfulness should not be viewed as a perfect marker of contemplative development, but as a useful indicator that mindful skills are becoming more available in ordinary consciousness. If formal practice helps cultivate attentional stability, awareness of internal events, nonjudgment, and nonreactivity, then increases in dispositional mindfulness may signal that these capacities are no longer restricted to the meditation cushion. In this sense, dispositional mindfulness may index the internalization of skills first rehearsed in formal practice and later generalized through informal application.

A Developmental Model of Practice in MBIs

I therefore propose the following theoretical model (Figure 1).

In the *early phase* of an MBI, formal practice is especially important because it provides a structured environment for acquiring basic mindfulness skills: attentional stabilization, repeated recognition of distraction, reorientation to present-moment experience, and a less reactive stance toward inner events. During this phase, more frequent or more consistent formal practice may reasonably predict better outcomes, particularly if it is of sufficient quality.

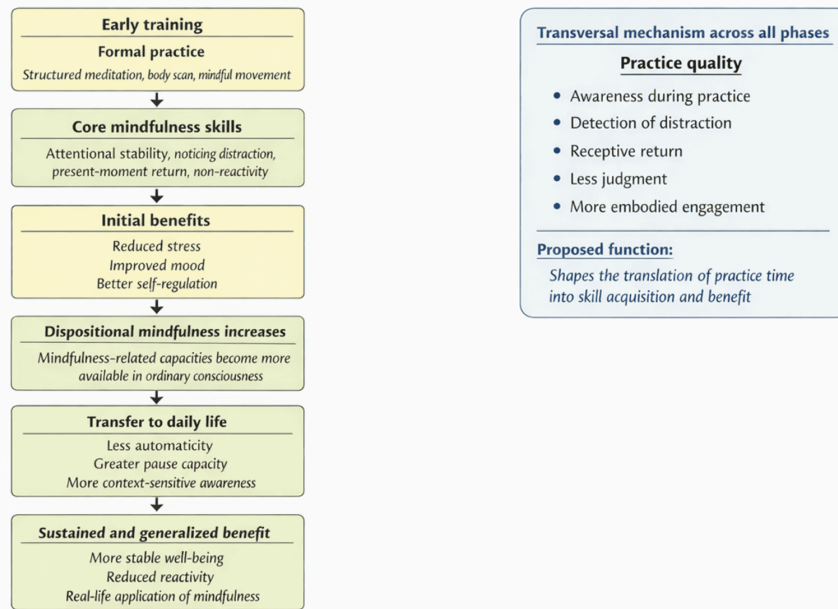
In the *intermediate phase*, the central process is not merely continued exposure to meditation, but increasing transfer. Participants begin to notice automaticity in everyday life, pause more readily, and recruit mindful awareness in emotionally salient situations. Here, increases in dispositional mindfulness may reflect the consolidation of this shift.

In the *later or maintenance phase*, the relative contribution of sheer formal practice quantity may decline for at least some participants. What may matter more is whether mindfulness has become behaviorally and experientially available in daily life. Informal practice, and the ability to enact mindfulness under real-world conditions, may become stronger predictors of sustained gains. Throughout all phases, practice quality functions as a transversal mechanism, shaping whether time spent practicing is translated into actual skill acquisition and change.

The assumption that longer formal sessions are necessarily the most relevant dimension of practice is also challenged by prior evidence. Soler et al.^[14] reported that frequency of meditation and lifetime practice were more strongly associated with self-reported mindfulness than session duration. This pattern supports the possibility that repeated, sustained engagement may be more important than absolute session length and that the developmental effects of practice may depend on how mindfulness capacities are consolidated over time rather than on a simple linear dose model.

This model helps explain why the literature on practice dose is mixed. If formal practice is most influential early on but less determinant once skills are embodied, then studies measuring aggregate practice across whole interventions or follow-up periods may blur phase-specific effects. If informal practice is often undermeasured, then key pathways of generalization may remain invisible. If practice quality is omitted, then null findings for minutes practiced may reflect measurement error at the level of mechanism, not the absence of an active process.

Developmental model of practice in mindfulness-based interventions



Developmental hypothesis: The contribution of formal practice quantity is strongest early in training. As dispositional mindfulness strengthens, informal practice and practice quality become increasingly important, for maintenance and generalization.

Figure 1. Developmental model of practice in mindfulness-based interventions. The figure illustrates a proposed developmental model in which the functional role of mindfulness practice changes over the course of training. In the **early phase**, **formal practice** is hypothesized to play a particularly important role in the acquisition of core mindfulness-related skills, including attentional stabilization, repeated detection of distraction, reorientation to present-moment experience, and reduced reactivity to internal events. These processes contribute to initial improvements in psychological outcomes and to increases in **dispositional mindfulness**. In the **intermediate phase**, dispositional mindfulness is conceptualized as a marker of emerging internalization of these skills, supporting greater transfer from structured meditation contexts to everyday life. In the **later or maintenance phase**, **informal practice**—that is, the application of mindful awareness during daily activities and emotionally salient situations—is proposed to become increasingly relevant for the generalization and maintenance of benefits. Across all phases, **practice quality** is depicted as a transversal mechanism influencing the extent to which time spent practicing is translated into actual skill development and therapeutic benefit. The model further proposes that the association between the quantity of formal practice and outcomes is strongest earlier in training and may weaken over time as dispositional mindfulness strengthens and mindfulness becomes more readily enacted in daily life.

Implications for Research

The model yields several testable hypotheses. First, the association between formal practice and outcome should be strongest in the early phase of training. Second, this association should weaken as dispositional mindfulness increases. Third, informal practice should be more strongly associated with maintenance and ecological generalization of benefits than with initial acquisition. Fourth, practice quality should mediate the relationship between formal practice time and change in both dispositional mindfulness and clinical outcomes. Fifth, participants with higher post-intervention dispositional mindfulness may require less intensive formal practice to maintain gains, provided that informal practice remains active and meaningful.

These hypotheses cannot be adequately tested by relying only on global post hoc estimates of total practice time. They require longitudinal designs, repeated measurement, and explicit modeling of interactions and mediation. They also call for better measurement of informal practice and practice quality, both of which remain comparatively underdeveloped in the literature. For contextualized and implementation-oriented programs, including Mindfulness-Based Health Promotion^[15], this research agenda may be particularly relevant because the practical goal is often not only symptom reduction but sustainable transfer of mindfulness into daily living, self-care, and health behavior.

Clinical and Pedagogical Implications

This model also has implications for teaching and implementation. It suggests that instructors may need to move beyond a uniform emphasis on minutes practiced and toward a more nuanced pedagogy. Early in training, a clearer emphasis on regular formal practice may be justified. Later, however, participants may benefit from guidance that helps them recognize how mindfulness is showing up in ordinary life, not only in dedicated meditation sessions. Similarly, monitoring practice quality may be at least as important as tracking adherence. A participant who practices less but with increasing clarity, receptivity, and transfer may be progressing in a clinically meaningful way, even if they do not conform to idealized practice prescriptions.

This does not imply that formal meditation becomes dispensable. Rather, it suggests that its function may evolve. For some individuals, formal practice will remain central over the long term. For others, especially once foundational skills are embodied, the balance may shift toward a more integrated,

informal, and context-sensitive mode of practice. A mature science of MBIs should be able to account for both trajectories without reducing either to a simplistic metric of total minutes.

Conclusion

The field of mindfulness-based interventions has reached a point at which the question is no longer whether practice matters but how it matters. The current evidence supports the view that formal practice is beneficial on average, yet not sufficient to explain the full range of outcomes observed across studies and participants. Informal practice, practice quality, and dispositional mindfulness offer a more differentiated framework for understanding how mindfulness is acquired, embodied, and maintained over time. I have argued here for a developmental model in which formal practice is particularly important for early skill acquisition, while informal practice and practice quality gain relative prominence as dispositional mindfulness strengthens. This model does not reject the importance of practice; it refines it. In doing so, it offers a coherent explanation for the heterogeneity of the literature and a clinically useful agenda for future research.

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