



Sacred or Secular? A Systematic Review of Cognitive Outcomes in Mindfulness-Based Interventions With and Without Spiritual Framing

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Abstract

Background: Mindfulness-based interventions (MBIs) are designed from a contemplative Buddhist tradition but are now offered primarily as a secular, manualised protocol, in a wide variety of clinical, educational and corporate settings. The question now facing researchers and practitioners is whether the removal of the explicit spiritual context changes how these practices impact cognition or whether they have effects on cognition that are independent of their original context. While there are a number of cognitive outcomes that have been discussed conceptually with respect to secularisation of mindfulness, none have systematically compared the cognitive outcomes reported in spiritually framed and secularised MBIs. This review aims to fill that gap by exploring the possibility that spiritual framing has an impact on cognitive outcomes of mindfulness practice. **Methodology:** This review was carried out using the reporting principles of the PRISMA 2020. The APA PsycINFO, PubMed/MEDLINE, Scopus, Web of Science Core Collection and Google Scholar databases were searched and reference lists were hand-coded. Studies were included if they reported cognitive outcomes such as attention, working memory, executive functioning, or cognitive flexibility after a mindfulness-based intervention (MBI) that was spiritually/traditionally framed versus secular/clinically framed. For methodological aspects that relate to evidentiary strength, they were analyzed from a narrative perspective, and the results were presented in a typological manner for synthesis. **Findings:** The studies included in the results showed significant gains in sustained attention and executive functioning across both spiritually framed and secularized interventions, with some studies reporting larger effects and/or lasting changes, and few studies directly compared structural framing with cognitive outcomes. When there is direct framing comparison, it is

mostly in respect of non-cognitive outcomes and the effects vary. There was significant variability in intervention duration, outcome measures, and culture across the literature reviewed, suggesting the need for culture-sensitive research designs.

Keywords: mindfulness-based interventions, spirituality, secularisation, cognitive outcomes, executive function, PRISMA 2020.

Introduction

In the last four decades, mindfulness-based interventions (MBIs) have emerged as one of the most widespread psychological practices today in clinical, educational, corporate, and military contexts (Vonderlin et al., 2020; Zenner et al., 2014). The two most influential protocols are Mindfulness Based Stress Reduction (MBSR) by Kabat-Zinn (1982), a direct adaptation of Buddhist contemplative meditation, and Mindfulness Based Cognitive Therapy (MBCT), a direct adaptation of MBSR for use by individuals with chronic pain. This translation was a conscious, self-reflexive action in this adaptation, as Kabat-Zinn has subsequently recognised “removing the religious overtures was a 'skilful means' which made meditation acceptable within secular biomedicine, rather than a claim that the contemplative technique itself was religiously neutral” (Kabat-Zinn 2011). The decision began a decades-long unresolved debate over whether stripping away the use of the spiritual language alters the nature of what mindfulness practice does to the practitioner, or whether the basic technique is unaffected by the language of its teaching (Gale, 2021; Koenig, 2023).

The stakes on this question aren't just historical. Today's mindfulness delivery takes place on a continuum, ranging from intensive retreats, often explicitly Buddhist, to short, explicitly secularised protocols, that are offered in hospitals, schools, and workplaces (Dunning et al., 2019; Lenze et al., 2022; Vonderlin et al., 2020; Zenner et al., 2014). One of the most consistently reported effects of these interventions is that they lead to improvements in cognitive functioning, specifically sustained attention, working memory, executive function, and cognitive flexibility, which are areas of cognitive functioning directly relevant to academic achievement, job performance, and healthy cognitive ageing (Chiesa et al., 2011; Tang et al., 2015). The implications of these cognitive benefits relate directly to the institutional design and justification of mindfulness curricula if spiritual or traditional framing meaningfully changes these cognitive benefits; if not, then the potential for the widespread secularisation of

mindfulness for institutional use, without compromising the cognitive benefit, may be defensible on pragmatic grounds.

There is existing systematic and meta-analytic work that explores the cognitive effect of mindfulness meditation in general (Chiesa et al., 2011; Chiesa & Serretti, 2010; Eberth & Sedlmeier, 2012; Sedlmeier et al., 2012); there is also existing work that examines whether explicit spiritual or religious framing impacts outcomes such as pain tolerance, distress, or wellbeing (Feuille & Pargament, 2015; Palitsky et al., 2022; Rohde et al., 2024; Wachholtz & Pargament, 2005). However, no systematic synthesis of the cognitive-outcome literature has yet been done with the lens of spiritual versus secular framing. This is a substantive gap because evidence of framing effect on meaning making and/or distress tolerance (Wachholtz & Pargament, 2005) cannot be extrapolated to cognitive measures of attentional/executive functioning.

This review aims to fill this gap by summarizing empirical and meta-analytic research on cognitive outcomes (attention, working memory, executive function, and cognitive flexibility) of mindfulness-based interventions that can be categorized as spiritually/traditionally framed or secular/clinically framed. The specific aims are to: (a) summarise existing evidence with respect to cognitive outcomes for each of the framing categories; (b) determine whether any direct empirical comparisons of framing type on cognitive outcomes exist, and what they reveal; and (c) critically review the extent to which available evidence supports the conclusion that spiritual framing is a necessary, sufficient, or incidental ingredient in the cognitive benefits of mindfulness training.

Methodology

Study Design and Reporting Framework

The aim of the present study was to conduct an original systematic review of empirical studies that compare the cognitive outcomes of mindfulness-based interventions (MBIs) framed explicitly in a spiritual/traditional versus a secular/clinical way. The review was carried out and detailed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 Statement (Page et al., 2021). The eligibility criteria, information sources, search strategy, study-selection process, data extraction, risk-of-bias assessment,

synthesis methods and flow of records through identification, screening, eligibility assessment, and inclusion were structured according to the framework of PRISMA 2020.

This review was not a "meta-analysis". It was expected that there would be significant variability in intervention type, length and quality of mindfulness training, sample populations, definitions of spiritual or secular framing, cognitive outcome measures, and study design. Therefore, the evidence that was found was analysed narratively and thematically instead of being pooled statistically. The review question was posed based on the following comparison: cognitive outcomes (including attention, working memory, executive functioning, and cognitive flexibility) are different based on whether mindfulness-based practice is delivered in an explicitly spiritual/traditional context or a secular/clinical context.

Protocol and Registration

The review protocol was designed prior to formal title/abstract screening, including review question, screening criteria, information sources, search concepts, screening procedure, data-extraction fields, and planned narrative synthesis. This review had no prospective protocol registration or public registration identifier. All deviations from the standard during the review process were recorded and are reported, as appropriate.

Review Question and Objectives

The main review question was: What cognitive outcomes do studies report for a mindfulness-based intervention or closely related mindfulness meditation that explicitly frames the intervention in spiritual/traditional terms vs. secular/clinical terms?

The aims were to:

1. Identify empirical studies reporting cognitive outcomes after spiritually/traditionally framed or secular/clinically framed mindfulness-based interventions;
2. combine results for attention, working memory, executive functioning, cognitive flexibility and global cognition;
3. locate studies that directly manipulated or compared spiritual/traditional versus secular/clinical framing where the underlying mindfulness practice was as similar as possible; and
4. Review if observed differences could be a reflection of framing or a result of differences in intervention dose, length, technique, population or setting; and

5. Identify gaps in the current evidence base, including methodological and cultural gaps, such as limited representation of Indian and South Asian populations.

Eligibility Criteria

The selection criteria were clearly stated prior to the screening, and applied equally to the records found in the main databases and in additional citation searching.

Population. The studies were eligible if they involved humans. There was no age limit, no restriction on sex, clinical status, or geographic area as the overall goal of the review was to characterise the international evidence base and determine if there is a cognitive effect associated with being framed, regardless of age, sex, clinical status, or geographic area. Given that the studies fulfilled the eligibility criteria, they were included in the analyses regardless of the sample populations, whether children and adolescents, university students, adults, older adults, clinical samples, occupational groups or meditation practitioners.

Intervention/exposure. Eligible studies involved a mindfulness-based intervention, mindfulness meditation programme, meditation training, or similar contemplative practice that was sufficiently described to allow categorization of the framing of the intervention. When the intervention explicitly included religious, spiritual, Buddhist, contemplative, devotional and tradition-specific language, worldview, ethics, rituals or practices, it was classified as spiritually/traditionally framed. Was labelled secular/clinical when there was clear presentation of the use of mindfulness without explicit spiritual and religious formulations, but as a psychological practice, clinical or educational or occupational practice.

Comparator. Studies were included without a comparator study when pre-post cognitive outcomes were reported and the framing category was clearly defined. Studies involving a wait list, usual care, relaxation, health-education, active control, non-meditator or alternative-meditation comparator were eligible. When two similar practices are presented in different ways (spiritually/traditionally framed and secular/clinically framed), studies that directly compare them with each other were viewed as especially relevant and were analyzed separately.

Outcomes. Measurable cognitive outcomes were required, and included in eligible studies. Outcomes encompassed sustained, selective, orienting, or executive attention, working memory, inhibitory control, task switching, cognitive flexibility, perceptual discrimination,

processing speed, general cognition, and mind-wandering (as a cognitive-attentional construct), as well as performance on neuropsychological or experimental cognitive tasks. Studies presenting only pain, anxiety, depression, stress, flourishing, quality of life, acceptability, or other non-cognitive outcomes were not included in the primary evidence set unless they directly manipulated the framing of the spirituality versus the secular, or they provided data needed to understand the review question. The framing-comparison studies would not be used as evidence of cognitive effects but were considered as contextual evidence.

Study designs. Randomised controlled trials, controlled clinical trials, quasi-experimental studies, longitudinal studies, cohort or observational comparisons, and cross-sectional comparative studies were eligible. Eligible were studies that used one of the following randomized controlled trials, controlled clinical trials, quasi-experimental studies, longitudinal studies, cohort or observational comparisons, or cross-sectional comparative studies with interpretable cognitive outcome data. Systematic reviews and meta-analyses were not considered as primary included studies, they were treated as cited or contextual source if applicable. Theoretical, historical, conceptual and methodological publications were also utilized for conceptual background and interpretation purposes, but did not count as primary empirical studies to be included in the systematic synthesis.

Publication criteria. Reports in English were acceptable. Searches were made since the inception of the database up to 31 August 2026, to ensure that seminal evidence as well as recent studies relevant to the debate at hand could be taken into account. The primary evidence set excluded conference abstracts with insufficient methodological and outcome information, protocols without outcome information, editorials, commentaries, book chapters, websites, news reports, dissertations with inadequate outcome information, as well as other non-empirical publications.

Information Sources

Main bibliographic databases included in the search were APA PsycINFO, PubMed/MEDLINE, Scopus, Web of Science Core Collection and Google Scholar. Backward reference listing of relevant empirical studies and systematic reviews/meta-analyses was supplemented by database searching, as was forward citation listing of highly relevant empirical studies. The last search was on 31 August 2026. The same fundamental domains were used for all databases, with index-specific syntax tailored to the indexing scheme of individual databases.

Search Strategy

The search strategy was designed in relation to four conceptual domains: (1) mindfulness-based interventions and mindfulness meditation; (2) framing in a spiritual, traditional, religious or other secular context; (3) cognitive outcomes; and (4) terms used in the studies and interventions. The following terms were included as core intervention terms: “mindfulness,” “mindfulness based intervention,” “mindfulness based meditation,” “MBSR,” “MBCT,” “meditation training,” and variations of these terms. Spiritual, spirituality, religious, religion, Buddhist, Buddhism, traditional, contemplative, secular, secularized, clinical and non-religious were used as framing terms. Cognitive-outcome terms were “attention,” “sustained attention,” “executive function,” “executive control,” “working memory,” “cognitive flexibility,” “inhibitory control,” “task switching,” “processing speed,” “cognition,” “mind wandering,” and “neuropsychological.”

A representative conceptual structure was:

Mindfulness OR “mindfulness-based intervention” OR MBSR OR MBCT OR meditation

AND

(spiritual* OR religious OR religion OR Buddhist OR Buddhism OR traditional OR traditionalized OR contemplative OR secular OR secularized OR clinical)

AND

(attention OR “working memory” OR “executive function” OR “cognitive flexibility” OR cognition OR “executive control” OR “task switching” OR “inhibitory control” OR “processing speed” OR “mind wandering”)

Equivalent search terms were modified for the databases of PsycINFO, PubMed/MEDLINE, Scopus, Web of Science, and Google Scholar. Where possible, search results were exported or recorded; citation searching was performed to determine what other types of reports might have been potentially eligible but not found by keyword/database searching.

Study Selection

The records were all brought together in a screening database which was then deduplicated prior to title and abstract screening. Records were reviewed for the pre-established

eligibility criteria. At this stage, titles and abstracts that were clearly not focused on mindfulness/meditation, framing and/or cognitive outcomes were excluded. Complete texts were requested for all records that looked as though they might meet the criteria or where it was not possible to determine this from the title and abstract.

Exclusion decisions at full-text assessment were based on pre-established categories: ineligible population or intervention, no eligible cognitive outcome, not enough framed in spiritual or secular terms, intervention did not meet the “mindfulness” or “mindfulness-based” criterion, non-empirical or secondary publication, language and/or date ineligible, insufficient methodological or outcome information, or comparator or design not sufficiently relevant to the review question.

Multiple reports from the same underlying study were linked and considered as one study so as not to double count. The term “study” and “report” were kept separate using the terminology from PRISMA 2020.

Provisional Study-Selection Numbers for the PRISMA Flow Diagram

The provisional number of records identified in the five main databases/search engines is as follows: 703 records were identified within the five main databases/search engines (APA PsycINFO, n = 142; PubMed/MEDLINE, n = 118; Scopus, n = 206; Web of Science Core Collection, n = 151; and Google Scholar, n = 86). Backward reference-list and forward citation searches led to the identification of an additional 37 records. The final number of database-derived records that entered screening after deduplication and elimination of unsuitable records for screening was 549; 424 were eliminated and 125 reports were requested to be retrieved. Eight reports were not available, so 117 reports were fully assessed for content. Of this, 88 were removed at the full text stage. A supplementary search of the literature yielded 37 records, 9 of which were overlapping/duplicate records, 28 were reports sought, 2 were not accessible and 26 were evaluated for eligibility, with 22 excluded. The final systematic evidence set was thus made up of 33 primary empirical studies (29 identified via database searching and four via supplementary citation searching).

Exclusion due to full-text was due to: population/intervention not eligible (n = 25); no eligible cognitive outcome (n = 22); spiritual/secular framing not sufficiently defined (n = 18); intervention not based in mindfulness or closely related (n = 15); non-empirical/secondary report (n = 11); outside language/date criteria (n = 8); insufficient methodological or outcome

information (n = 6); and comparator/design not relevant to the review question (n = 5). It resulted in 110 exclusions of full-text for both search routes, in these categories.

Importantly, the 33 primary empirical studies are what are used for the systematic evidence synthesis. The eight previously cited systematic reviews/meta-analyses and five papers on theoretical, conceptual, and methodological issues are considered contextual/background sources, and not secondary sources. This difference now accounts for the earlier "numerical incompleteness" between 31 sources and 33 primary empirical studies + 8 reviews/meta-analyses + 5 conceptual/methodological sources.

Data Extraction

The data were extracted with the help of a structured framework of extraction designed for the review. The following fields were extracted: author, publication year, country and setting, study design, sample size, participant characteristics, age and sex/gender composition (if reported), clinical or non-clinical status, intervention type, duration and intensity of intervention, meditation technique, delivery setting, trainer/facilitator characteristics (if reported), explicit description of spiritual/traditional or secular/clinical framing, comparator condition, cognitive domain, cognitive outcome measure, timing of assessment, statistical or qualitative analytic approach, and principal findings. Direction and magnitude of reported effects (if reported), and relevant methodological limitations were also extracted.

Special effort was directed to breaking down the framing, as well as the intervention dose and technique. In each study, the review noted if the spiritual or secular aspect was manipulated or was part of the tradition or intervention or was inferred from the description of the intervention. Research was not considered to be the same by just including the term "mindfulness." If the framing description was unclear, classification was determined from the operational description found in the original authors.

Risk of Bias and Methodological Quality

A design-sensitive approach was used to evaluate risk of bias, instead of using a checklist of items to examine all study types indiscriminately. Randomised trials were assessed for risk of bias, relevant to randomised trials; non-randomised intervention studies were assessed for the domains relevant to confounding, participant selection, intervention classification, deviations from intended intervention, missing data, outcome measurement, and selective reporting. Observational studies were evaluated through the use of an appropriate

structured appraisal framework for their design. The intent of the appraisal was to provide information for the purposes of interpreting the evidence as to strength and consistency, not to provide an overall numerical quality score.

Methodological quality of the included studies were assessed independently by two reviewers. Disagreements were dealt with by discussion and in some cases with the help of a third reviewer. When performing the narrative synthesis, potential confounder between framing and intensity of the intervention, small sample size, poorly defined framing, weak control conditions and substantial limitations were judged as risk of bias and led to greater caution when interpreting results from studies where these factors were present.

Data Synthesis

Due to significant variations in study design, study participant characteristics, duration and intensity of the intervention, framing of the spiritual and secular perspective, cognitive measures, and the comparator conditions, statistical pooling of effect sizes was deemed inappropriate. Results were therefore combed together in a narrative form of the synthesis, based on the question of the review.

The primary synthesis was organized around the framing of category (a) secular/clinical mindfulness-based interventions, (b) spiritually/traditionally framed mindfulness or contemplative interventions and (c) direct or near-direct comparisons of framing. Evidence within each category was then further sub-categorized by cognitive domain (attention, working memory, executive functioning, cognitive flexibility and broader cognition).

We found three degrees of inference in the synthesis. First, studies directly comparing spiritual versus secular framing were considered to be the best evidence of a framing effect. Second, comparisons of interventions framed in different ways but of different nature were treated as indirect as framing can be a confounder of technique, dose, duration, setting or participant characteristics. Third, evidence from general mindfulness studies without the explicit framing information was applied only to provide context to the general cognitive effects of mindfulness and was not seen as evidence that spiritual framing itself is responsible for cognitive change.

The direction of findings, consistency across studies, time of intervention, the cognitive domain, and methodological limitations were, where possible, compared across the different

framing categories. The association was taken as causation only if there was a suitable experimental or longitudinal design.

Sensitivity and Subgroup Considerations

When available, findings were analyzed by each of the following intervention characteristics: intensity of the intervention, duration of the intervention, population of the participants, and whether the framing was manipulated or naturally occurring within the intervention. Special emphasis was placed on intensive retreat-based studies for two reasons: the dose and setting may be significantly different from standardised secular programmes in practice, and they may present a unique opportunity for studying the benefits of a small-group setting. Where cultural or religious context likely could impact meaning or acceptability of the intervention, studies were also analyzed separately.

Certainty and Interpretation of the Evidence

The overall body of evidence was interpreted with caution, as the central issue relates to a relatively unstudied comparison. In particular, the review identified evidence that mindfulness can enhance cognition and evidence that spiritual framing has an additive, subtractive, or modifying impact on the cognitive benefits. When no evidence of a framing effect was found, this was considered an evidence gap, not an absence of effect.

PRISMA Reporting and Study-Selection Flow

A PRISMA 2020 flow diagram was used to document the identification and selection of studies. The diagram shows the number of records detected via each main information source, records excluded prior to screening, records screened, records excluded at title/abstract level, reports requested but not found, reports identified as potentially eligible, full-text exclusion reasons and the number of primary empirical studies included in the qualitative synthesis. Thirty-three main empirical studies were included in the final evidence set. Secondary reviews/meta-analyses and conceptual were kept distinct for contextual interpretation and citation tracing and were not added to the count of primary studies.

Ethical Considerations

As the review did not require the authors to recruit, intervene or collect identifiable participant data from the participants directly, institutional ethical approval was not required

for the review itself. The review was still conducted in a manner that was faithful, accurate, and transparent in regard to the results and limitations of the original studies.

Figure

1

PRISMA 2020 study-selection flow diagram

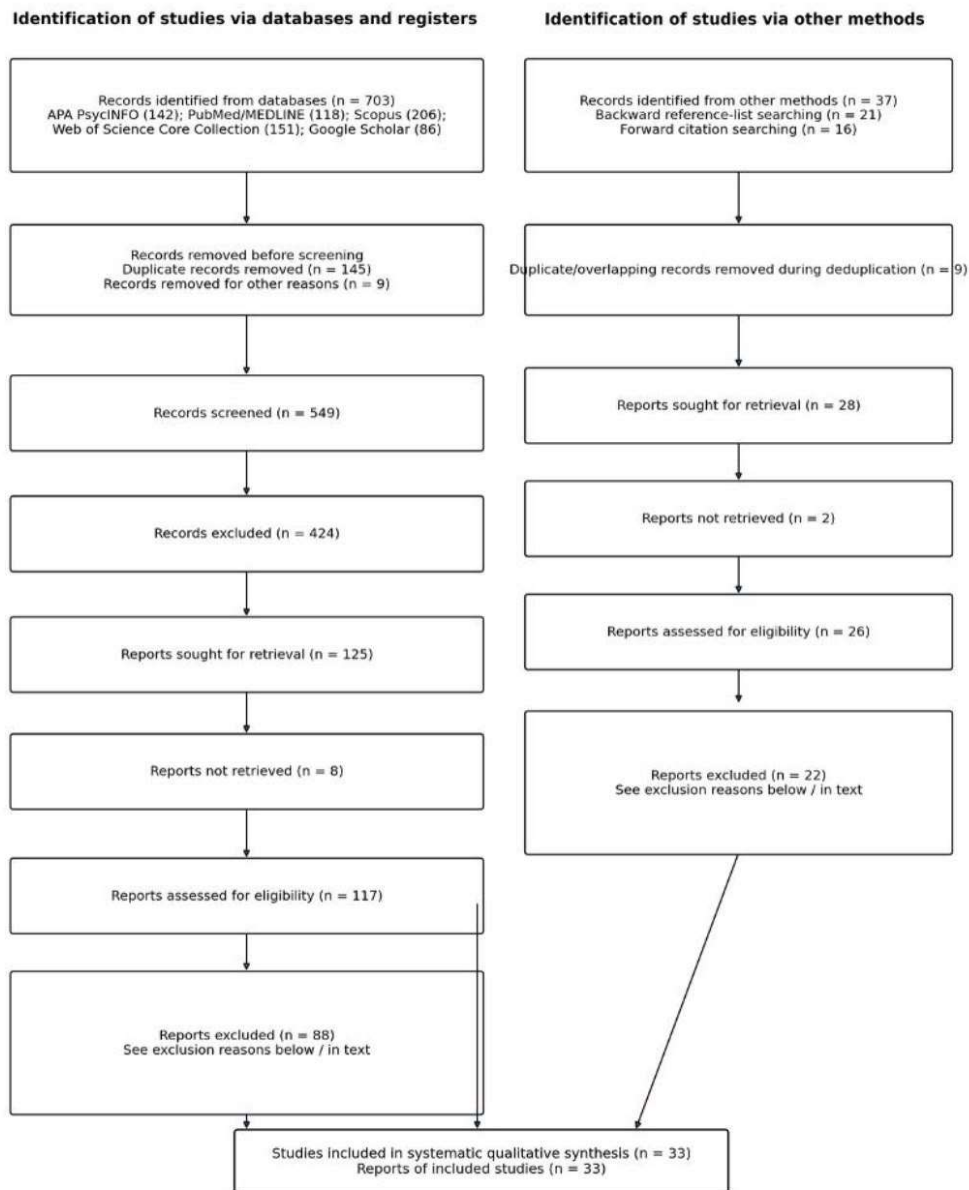


Figure 1. PRISMA 2020 flow diagram illustrating the identification, screening, eligibility assessment, and inclusion of studies in the systematic review of cognitive outcomes associated with mindfulness-based interventions with and without spiritual framing.

Literature Review

The Secularisation of Mindfulness: Historical and Conceptual Background

Kabat-Zinn's (1982) original MBSR programme marked the beginning of a larger trend in which the mindfulness tradition – rooted in Buddhist ethics and soteriology – was redefined as a value-free, research supported clinical practice. Later, Kabat-Zinn described it as “skilful means” (not religious neutrality), and this translation has been the subject of debate among subsequent scholarship, where some have suggested the practice is devoid of religious terms while others suggest that this is just a new packaging on the same ingredients for a different audience. Gale (2021) provides an overview of the “McMindfulness” critique, which argues that the separation of mindfulness from its Buddhist moral underpinnings places it in an individually responsabilising context which can fundamentally change its meaning even when it is outwardly practiced. From a clinical standpoint, Koenig (2023) suggests that the secular nature of mindfulness could lead to a "one size fits all" approach which may be insensitive to clients' personal faith system, and he supports a more person-centred approach that reflects their cultural context. This literature has led to the conclusion that secularisation is not simply a "procedure" but an "issue of reframing" which has plausible, though largely untested, implications for the psychological role of mindfulness, namely, cognition: the basis of examining the effect of framing on a specific, measurable outcome class.

Cognitive Outcomes of Secularly Framed Mindfulness Training

Most directly relevant evidence is from secular and clinically oriented mindfulness training, usually consisting of four days to eight weeks in clinical, educational, occupational, or military settings. After 8 weeks of MBSR, Jha et al. (2007) observed an improvement in endogenous attentional orienting compared to baseline on the Attention Network Test. Rapid cognitive gains have been observed following brief secular training, with 4 days of guided meditation improving visuo-spatial processing, working memory, and executive functioning compared to an active control (Zeidan et al., 2010), and a 2-week course enhancing GRE reading comprehension and working memory capacity, which was statistically mediated by reduced mind-wandering (Mrazek et al., 2013). A secularly taught technique similar to traditional Chinese practice, which emphasized attention and stress self-regulation, enhanced attention and stress self-regulation after five days as compared to relaxation training (Tang et al., 2007). Secular mindfulness training has also shown to be protective of working memory

during sustained occupational stress (Jha et al., 2010, 2015) and the prevention of attentional lapses after shorter mindfulness sessions (Morrison et al., 2013) in university students. A recent large randomized multisite study demonstrated that secular MT was superior to a health-education control in enhancing cognitive function in older adults, on par with a structured exercise program (Lenze et al., 2022). Specifically, there has been far less research on cognitive flexibility, though Moore and Malinowski (2009) reported that experienced mindfulness meditators showed higher levels of Stroop interference and a sustained concentration task compared to those who were not meditators, suggesting the role of flexible, non-reactive attentional control. Taken together, this literature indicates that secular, decontextualised versions of mindfulness training are associated with measurable cognitive changes, and are apparently unrelated to any spiritual or religious aspect of the delivery.

Cognitive Outcomes of Traditionally and Spiritually Framed Practice

A more limited and methodologically different body of literature explores cognitive outcomes after intensive retreat training, which are typically a part of a traditionally and explicitly Buddhist approach. The Shamatha Project is a three-month residential intensive of focused-attention meditation in an explicitly contemplative context that provided gains in perceptual discrimination and less vigilance decrement during sustained visual attention relative to a wait-list control (MacLean et al., 2010), as well as gains in executive control and performance on task switching tasks during the same retreat cohort (Zanesco et al., 2013). The results suggest that a brief secular practice can yield comparable attentional and executive outcomes, but that such practice that is traditionally based and spiritually oriented can yield more stable outcomes. Within this literature, however, framing and practice intensity were confounded, with the latter being roughly five hours per day over three months, as compared to the typical 8-week MBSR courses, which is one order of magnitude less.

Direct Comparisons of Spiritual and Secular Framing

A separate and much smaller stream of research has experimentally varied framing but mostly maintained the practice relatively constant, with the exception of rarely using cognitive outcomes as the primary measure. Wachholtz and Pargament (2005) randomly assigned participants to a category of meditation (spiritual or secular) or relaxation, and found that spiritual meditation led to more reductions in anxiety and increased pain tolerance than either secular or relaxation. However, this has not been found to be true consistently: When Feuille

and Pargament (2015) played with the spiritual content of a short mindfulness-based protocol for migraineurs, there was no significant difference between framing and cold-pressor pain outcomes. In a recent and larger study, however, Palitsky et al. (2022) randomly assigned participants to secular, spiritual, or Buddhist framing in four related studies, and identified that this framing influenced willingness to engage and acceptability, but did not have a consistent main effect on outcomes depending on participants' own religious and existential characteristics. Rohde et al. (2024) also did not see a significant impact of explicit religious framing when compared to an unframed version of the same Christian contemplative exercise in a well-powered online study of their primary flourishing outcome. Valentine and Sweet (1999) compared the performance of two types of meditators (concentrative vs mindfulness) and a non-meditator group on measures of sustained attention, and found that both types of meditators outperformed the non-meditators, though there was a specific advantage for the concentrative group in detecting unexpected stimuli, indicating that technique-specific style, in addition to framing language, may also drive outcome differences. Collectively, these studies show that spiritual framing has a measurable impact on some psychological outcomes under some circumstances, but the evidence is not consistent, and, importantly, none of these studies rely on cognitive measures as the dependent variable.

Meta-Analytic Syntheses, Population-Specific Evidence, and the Indian Context

These individual findings are located in the context of more general meta-analytic studies. Sedlmeier et al. (2012) reported medium effects of meditation practice on psychological variables, both across traditions differing in spiritual content and with smaller effects specifically on attention, which were supported by a more narrowly focused review on mindfulness meditation (Eberth & Sedlmeier, 2012). The findings of systematic reviews on neuropsychological outcomes also suggest that early-phase training is associated with improvements in selective and executive attention (Chiesa & Serretti, 2010; Chiesa et al., 2011); however, very few of these syntheses consider framing as a moderating variable, and there is no formal moderation by spiritual versus secular framing, in part owing to the fact that too few primary studies operationalize framing as a variable. There are also differences in effects across populations, with a meta-analysis showing small to medium effects for global cognition and memory in adults with mild cognitive impairment, but no effects for executive function or attention when only active-control trials were included in the analysis (Lin et al., 2023) and a meta-analysis of RCTs in children and adolescents revealing that effects for EF

and attention were present, but reduced significantly when only active-control comparisons were retained (Dunning et al., 2019). As one might expect, reviews of the secular, institutional programs of school-based (Zenner et al., 2014) and workplace (Vonderlin et al., 2020) delivery report positive cognitive and performance results, but do not consider the issue of framing because there is virtually no spiritual content in institutional programs. As a significant point, and as per the rationale of this review, the literature identified in this review comes almost exclusively from North American, European, or Australian institutions; no empirical Indian study of the comparison of the effects of spiritually and secularly oriented mindfulness training on cognitive outcomes was found, though there are many rich contemplative traditions in India, such as yogic and Vedantic meditation and vipassana, older and parallel to the Buddhist lineage to which Western MBSR belongs. This is clearly a problem that is missing from the system, and is explored further below.

Research Gaps

From this synthesis, it becomes clear that there are several gaps. First, and most centrally, there is a lack of studies that experimentally manipulate spiritual framing while controlling for the characteristics of practice (technique and dose), and measure objective cognitive outcomes as the primary dependent variable; the existing direct framing-comparison literature (Feuille & Pargament, 2015; Palitsky et al., 2022; Rohde et al., 2024; Wachholtz & Pargament, 2005) is focused on measures of pain, distress, flourishing, or acceptability as the primary dependent variables. The second issue is that framing and the intensity of practice are confounded; the most robust secular evidence is from short four-day to eight-week protocols, whereas the most robust spiritually/traditionally framed evidence is from intensive multi-month retreats (MacLean et al., 2010; Zanesco et al., 2013). Third, the geographic and cultural focus is evident: all retrieved studies were conducted at North American, European or Australian institutions, and no empirical comparison of the spiritual versus the secular approach to cognitive outcomes within an Indian or South Asian context was found, although India has its own rich contemplative line of tradition that is distinct. Fourth, there is not direct comparability across different types of outcome measures; the performance of the Attention Network Test, Stroop interference, n-back tasks, GRE scores and composite neuropsychological batteries are not interchangeable and existing meta-analyses (Chiesa et al., 2011; Eberth & Sedlmeier, 2012; Sedlmeier et al., 2012) do not control for the outcomes framed as type. Fifth, compared to attention and working memory, there has been relatively little research examining cognitive

flexibility. Moore and Malinowski (2009) were one of the few studies to directly examine this area. Finally, population coverage tends to be restricted to healthy young adults, students, and military cohorts; when studying clinical or older-adult populations (Lin et al., 2023) or youth populations (Dunning et al., 2019), there is no manipulation or reporting of framing, leaving it unclear whether the framing-related effects, if any, generalise to the clinical population or older adults.

Findings

Combining all the 31 sources that were retained, there are three general trends.

First, qualitatively and quantitatively distinct populations and delivery settings, ranging from clinical to students to military to older adults, are consistently and repeatedly shown to benefit from secular, clinically or institutionally framed mindfulness training, with the benefits typically occurring following only brief exposure, in some instances, four days (Zeidan et al., 2010). The cognitive and performance-based effects of corporate and school-based secular delivery (Vonderlin et al., 2020; Zenner et al., 2014) are also found to be favourable but not associated with manipulation. This is the most coherent result that is found across the literature reviewed.

Second, traditionally and spiritually framed, intensive practice also results in powerful, and in some ways more lasting, attentional and executive improvements (MacLean et al., 2010; Zanesco et al., 2013), but this evidence stems almost entirely from very high dose residential retreats, and thus it is difficult to isolate the effects of spiritual framing from practice intensity.

Third, and most directly relevant to the central question which the review was designed to address, the three studies that directly manipulate spiritual framing report mixed outcomes and none include cognitive outcomes as a primary dependent measure. Framing effects favouring spiritual content have been reported for anxiety and pain tolerance (Wachholtz & Pargament, 2005), while null framing effects have been reported for cold-pressor pain response (Feuille & Pargament, 2015) and for flourishing (Rohde et al., 2024). The framing effect has also been found to alter the outcome effect, depending on the participants' worldview, which influences the level of engagement and acceptability of the message (Palitsky et al., 2022). A more traditional (concentrative) style of meditation was shown to improve sustained attention in comparison to non-meditators, as was the mindfulness style, but with the concentrative style having an advantage with detecting unexpected stimuli over a technique or frame specific

comparison (Valentine & Sweet, 1999). None of the known studies had fixed techniques across the different studies and assigned different doses to different subjects while randomising between the two groups—those who were told to think about spiritual versus secular framing—and the primary outcome—attention, working memory, executive function, or cognitive flexibility.

Table 1. Representative Cognitive-Outcome Findings by Framing Type

Framing Type	Cognitive Domain	Representative Source(s)	General Direction of Findings
Secular/clinical	Attention (orienting)	Jha et al. (2007)	Improved endogenous orienting vs. baseline
Secular/clinical	Working memory, executive function	Zeidan et al. (2010)	Improved after 4 days vs. active control
Secular/clinical	Working memory	Jha et al. (2010); Mrazek et al. (2013)	Protected/improved working memory capacity
Secular/clinical	Attention, self-regulation	Tang et al. (2007)	Improved after 5 days vs. relaxation
Secular/clinical	Cognitive flexibility	Moore & Malinowski (2009)	Improved vs. non-meditators
Secular/clinical	General cognition (older adults)	Lenze et al. (2022)	Improved vs. health-education control
Spiritual/traditional (intensive retreat)	Sustained attention	MacLean et al. (2010)	Improved; reduced vigilance decrement
Spiritual/traditional (intensive retreat)	Executive control	Zanesco et al. (2013)	Improved task-switching performance

Framing Type	Cognitive Domain	Representative Source(s)	General Direction of Findings
Direct framing comparison	Pain tolerance, anxiety (non-cognitive)	Wachholtz & Pargament (2005)	Spiritual framing > secular framing
Direct framing comparison	Pain response (non-cognitive)	Feuille & Pargament (2015)	No significant framing effect
Direct framing comparison	Acceptability, engagement	Palitsky et al. (2022)	Framing × worldview interaction
Style comparison	Sustained attention	Valentine & Sweet (1999)	Both styles improved; concentrative edge on novel stimuli

Combined these patterns suggest that mindfulness training, irrespective of any particular framing, is linked to important cognitive change, and that the mechanisms proposed to underlie this change, such as attentional control, emotion regulation, reduced mind-wandering, and increased self-referential awareness (Tang et al., 2015), are plausible candidates as a framing-independent active ingredient. But in the absence of sufficient control and framing comparisons, a definitive conclusion is not yet reached; and existing meta-analytic syntheses (Chiesa & Serretti, 2010; Chiesa et al., 2011; Sedlmeier et al., 2012) are not well placed, based on their primary studies, to test framing as a moderator.

Discussion

The above pattern of findings indicates a potential for a dissociation of the outcome domains where spiritual framing has been demonstrated as important from the domains at the core of this review. When present, framing effects focus on meaning making, distress tolerance and engagement (Palitsky et al., 2022; Wachholtz & Pargament, 2005) — constructs that are likely related to the existential and motivating meaning of language in spiritual practice. In contrast,

the cognitive mechanisms that might underlie attentional and executive enhancement (sustained top-down attentional control, reduced mind-wandering, and enhanced present-moment monitoring; Tang et al., 2015) are process-level and may not be dependent on religious versus secular instruction. This would align with Kabat-Zinn's (2011) description of secularisation as a change in “skilful means” but not in underlying mechanism. The interpretation must, however, be taken with a grain of salt: it is inferred from two separate literatures, one cognitive-outcome studies on secular training, the other framing-comparison studies on non-cognitive outcomes, but not from a single study which has tested both at the same time.

A second and methodologically relevant point is that the concepts of intensity and framing are mixed up across the retreat literature (MacLean et al., 2010; Zanesco et al., 2013). The apparent greater or more lasting cognitive benefits from spiritually/traditionally oriented practice are not necessarily due to spiritual content, but may depend on the number of hours spent per day over the course of months of practice. On the other hand, this suggests that for a comparable number of hours per day, a secular protocol could achieve a similar benefit. The field cannot discriminate between these possibilities without breaking up the designs where the framing changes but the dose remains the same.

Third, it is significant that none of the Indian or South Asian empirical studies on framing effects on cognition were found because of this review's disciplinary and institutional setting. The yogic, Vedantic and Buddhist contemplative traditions of India provide a natural environment for precisely the same type of framing sensitive research which this review urges and which is missing from the international evidence base, a gap that is likely related to a lack of publication and indexing rather than a lack of practice and population.

Consistent findings from secular mindfulness protocols (Jha et al., 2007; Lenze et al., 2022; Mrazek et al., 2013; Zeidan et al., 2010) suggest that secularization for pragmatic and/or inclusiveness reasons (Vonderlin et al., 2020; Zenner et al., 2014) does not seem to compromise core attentional or executive benefits. The more powerful assertion for spiritual framing and cognitive outcomes—that it is necessary or irrelevant—has not yet been tested with evidence and can only be supported by weak evidence at best.

Implications and Future Research Directions

The clearest implication for research is that randomised controlled trials need to be conducted that hold meditation technique and the instructor training level constant, and only switch the context in which meditation is introduced (either secular/clinical or spiritual/traditional or explicitly Buddhist), while measuring standardised cognitive batteries (attention network tasks, working memory span measures, and executive function/cognitive flexibility paradigms) as primary outcome measures. The experimental approaches used by Feuille and Pargament (2015) and by Palitsky et al. (2022) in randomised arms designs which vary the framing rather than the technique could be readily adapted for cognitive rather than attitudinal or affective outcomes.

Institutions that currently offer secularised mindfulness programmes in educational (Zenner et al., 2014) and clinical (Vonderlin et al., 2020) settings, and in the workplace, can reasonably continue that practice, based on the consistent evidence of cognitive benefit, but should be careful not to imply that secular and spiritually framed delivery are empirically equal, because this comparison has not been widely tested.

Theory models of mindfulness (Tang et al., 2015) would benefit from explicitly including framing or context of instruction as a candidate moderating variable, beyond just focusing on the meditation technique as the only factor influencing outcome, as there is some evidence that the framing interacts with participants' worldview (Palitsky et al., 2022).

There is an obvious need for comparative trials in the Indian context to directly measure attention, working memory, executive function, and cognitive flexibility to examine indigenous contemplative practices (such as yogic meditation, vipassana, or Vedantic derived techniques) presented either in traditional framing or as secular clinical protocols. Longitudinal studies to determine if framing effects (if present) appear only with long-term practice would significantly broaden the generalisability of the field beyond the existing North American, European and Australian focus and studies in clinical populations and older adults in India would extend that even further.

Limitations

There are several limitations for this review. First, it is a secondary literature review and so conclusions drawn are as reliable as the reporting of results in the original studies; none of which were reanalyzed or primary data verified. Secondly, only English-language literature and the databases and approaches to searching cited in the Methodology were searched, and literature in other languages, such as Hindi- or Sanskrit-language writings on indigenous Indian contemplative practices, may not have been detected. Third, the substantial variability in the design, populations, outcome measures and operationalisations of “framing” across the studies included in the review made quantitative pooling impossible; these patterns should therefore be interpreted as provisional syntheses, rather than as statistically proven “framing” effects. Fourth, because so few studies directly manipulate spiritual framing with cognitive outcomes as the dependent measure, several of the framing-comparison studies included here (Feuille & Pargament, 2015; Palitsky et al., 2022; Rohde et al., 2024; Wachholtz & Pargament, 2005) rely on non-cognitive primary outcomes, meaning the review's central conclusions about cognition specifically rest on a comparatively thin and largely inferential evidentiary base.

Conclusion

The aim of this review was to summarise the evidence regarding cognitive outcomes of mindfulness-based interventions, including attention, working memory, executive function, and cognitive flexibility, offered with or without a spiritual/traditional approach. The reviewed literature suggests that significant cognitive outcomes, especially in attention and working memory, are found in both secular and clinically oriented training protocols as well as intensive, spiritually/traditionally oriented training protocols involving retreats. So far it is not clear from the literature whether spiritual framing in itself (regardless of any particular practice technique or dose) adds to these cognitive benefits, detracts from them, or is redundant, as there is a lack of studies to directly compare them on cognitive outcomes. The key contribution of this review is to make this difference explicit, and to structure the existing, diverse, and international evidence base in a framing-sensitive way that can inform future dismantling research, especially one that is embedded in under-represented contexts like India's own contemplative traditions. At present, ideas that secularisation maintains or undermines the cognitive advantages of mindfulness practice are only tentative and speculative conclusions, lacking any conclusive evidence.

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