

Opinion

Do contemplative practices make us more moral?

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Contemplative practices are a staple of modern life and have historically been intertwined with morality. However, do these practices in fact improve our morality? The answer remains unclear because the science of contemplative practices has focused on unidimensional aspects of morality, which do not align with the type of interdependent moral functioning these practices aspire to cultivate. Here, we appeal to a multifactor construct, which allows the assessment of outcomes from a contemplative intervention across multiple dimensions of moral cognition and behavior. This offers an open-minded and empirically rigorous investigation into the impact of contemplative practices on moral actions. Using this framework, we gain insight into the effect of mindfulness meditation on morality, which we show does indeed have positive influences, but also some negative influences, distributed across our moral functioning.

The multifaceted moral impact of contemplative practices

Contemplative practices (see [Glossary](#)), such as meditation or yoga, have moved into the mainstream, as both important facets of many people's daily lives and valid scientific frontiers. Broadly, contemplative practices ([Box 1](#)) are methods of training the mind toward psychological transformation that promote states of human flourishing, such as insight, wisdom, purpose, or effective moral cognition and behavior [1,2]. The current **contemplative science** renaissance has said a great deal about how these practices, and in particular mindfulness meditation, promote improvements in cognitive processing and well-being [3–5], although a small but growing literature indicates that, for some, meditation can lead to adverse events [6,7].

In contemporary society, most people do not take up a contemplative practice with moral motivations in mind, because the practices provide a great benefit to many facets of people's lives beyond the moral realm, including stress reduction or performance enhancement. Importantly, however, practices within **contemplative traditions**, such as Buddhism or Hinduism, from which many modern secular practices stem, together with some modern compassion or loving-kindness practices, have long been inseparable from the attempt to improve one's ethical life [8–10]. Yet, contemplative science has devoted comparatively little attention to how these practices impact our moral way of being [11]. Bridging this knowledge gap is critical because many more-or-less secular contemplative practices are being rolled out at scale into numerous areas of society, including business, education, and government. As we review in the following sections, there is not yet sufficient empirical data to say whether certain contemplative practices unequivocally improve or adversely affect different areas of our moral cognition or behaviors. A complicating factor in this inquiry is that the landscape of contemplative practices is vast, with multiple practices arising out of each tradition, producing radically diverse phenomenological experiences [12–15]. Thus, they are likely to produce diverging effects on various aspects of our

Highlights

We ask how contemplative practices influence our moral compass.

Given the broad range of contemplative practices, we expect diverse effects on morality from each practice.

Addressing these issues in a nuanced and comprehensive manner requires a multifactorial approach; otherwise, we overlook much of the moral impact of contemplative practices.

A critical assessment of mindfulness meditation reveals that it has both positive and negative effects on different factors of our moral functioning, which only become visible when viewed through a multifactorial lens.

To succinctly convey how a contemplative practice influences moral functioning, we provide a novel visualization tool to assist researchers to interpret the current state of the field and identify knowledge gaps.

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Box 1. What are contemplative practices?

We describe contemplative practices as those that train the mind toward positive psychological transformation that promotes flourishing, and share the common goal of attempting to reduce human suffering [1,2]. However, many practices could fit under this rubric. Although avenues such as psychotherapeutic interventions, contemplative education, or aesthetic appreciation (and even simply thinking or problem solving) could be considered a contemplative practice in this respect, some deeper distinguishing lines are needed.

By definition, contemplative practices predominantly involve an introspective mental training component, even if physical movement or dialog are the primary tools used [98]. Six key elements are required for a practice to be considered 'contemplative': the contemplation is volitional; there should be an object of contemplation (e.g., breath or mortality); sustained attention is directed at the object; there is awareness of engagement in contemplation; it involves a process of contemplation (e.g., reflection or observation) toward the object; and the contemplation is undertaken for a purpose or objective, such as developing insight or well-being [1]. Contemplative practices aim to alter a variety of psychological factors, such as attention, meta-awareness, affective processing, or self-insight, while also enhancing character traits that are considered virtuous [99].

To discuss a conception of morality for contemplative science, we primarily focus on contemplative practices that fit these criteria in the broadest sense, meaning traditions that use first-person reflection or cultivation of specific modes of experience brought about through mind-body practices in or outside an explicit spiritual context. These practices involve introspective awareness of subjective mental experience (e.g., meditation or centering prayer) or interoceptive awareness of one's physical form either through movement (e.g., yoga, twirling, tai chi, or qigong) or passivity (e.g., body scan while sitting) [100]. These practices can use external resources (e.g., fasting or monasticism) or plainly internal resources (e.g., reflection or stilling attention) to bring about the goal of psychological transformation toward flourishing and reduction of suffering. This is not meant to conclusively exclude dialectic, pedagogical, or psychotherapeutic methods, which we understand can fit into this conceptualization, but serves to hone down to contemplative practices with core moral aspirations.

moral cognition and behavior, which will result in varied changes to the overall **moral functioning** of practitioners [16].

Typically, moral functioning is described as individual **moral psychological factors** (i.e., cognitive, affective, and behavioral factors that become engaged in moral contexts) operating together to interpret and respond to moral information, enabling us to function as a more-or-less moral individual. Recent literature has identified key moral psychological factors [17,18] that include (but are not limited to) an individual's moral identity or self, awareness, intuitions, judgments, reasoning, intentions, decisions, emotions, behaviors, and responsibility [19–34]. Importantly, these factors operate differently when moral concerns involve or are related to oneself, others, or issues in the social environment [27,35]. To represent the moral functioning process, there has been a movement toward using descriptive multifactorial frameworks that include the aforementioned factors to account for the dynamic nature of human moral psychology [35–37].

However, to date, most contemplative science has utilized unidimensional research methods that focus on only one factor, such as prosocial outcomes or moral judgment. While this approach ensures methodological rigor, it simultaneously risks limiting our understanding of the true moral significance of an act beyond the dimension we are examining, such as overlooking the reasoning or intention behind an action. By contrast, utilizing a multifactor framework offers a more nuanced approach to understanding moral functioning, allowing us to become better positioned to gain insight into the differential moral mechanisms associated with the practices.

Thus, we propose that the most effective way to review and assess the moral implications of contemplative practices is through an empirically tractable multifactorial framework that encompasses the various moral psychological factors outlined in the preceding text. An advantage of such a multifactorial framework is its utilization of established empirical constructs that accord

Glossary

Contemplative moral development:

multiple dimensions of a moral being's cognitions, intentions, emotions, behaviors, and taking responsibility for their consequences considered as a whole. It accounts for how these factors affect the practitioner themselves and others when considering whether an agent or an act is 'moral'. This whole is considered as a highly dynamic causal, inter-related, and interdependent process that shapes the practitioner into becoming more-or-less moral. Ultimately, each response in this causal process becomes a fine-grained developmental shift that slightly reshapes the agent's moral model or identity of themselves.

Contemplative practices:

methods of training the mind toward psychological transformation that promotes states of human flourishing, which can include areas such as insight, wisdom, purpose, or moral improvement. They share the common goal of attempting to reduce human suffering, and predominantly involve an introspective mental (and often behavioral) training component (e.g., meditation, centering prayer, or reflection) even when they involve physical movement (e.g., yoga, tai chi, or qigong), dialog (chanting or debating teachings), or external resources (shamanistic journey or ascetic sensory deprivation). Hence, they are methods of first-person reflection or cultivation of specific modes of experience brought about through mind-body practices in or outside an explicit spiritual context.

Contemplative science:

field in which scientific tools are used to study the effects of the varieties of contemplative practices. This scientific inquiry occurs across the multidisciplinary fields of cognitive science, such as neuroscience, psychology, social sciences, and experimental philosophy.

Contemplative traditions:

any of the predominating religions (e.g., Buddhism, Daoism, Hinduism, or Islamic Sufism), historical (e.g., Stoicism) or spiritual traditions (e.g., Shamanism or Paganism), indigenous cultural belief systems (e.g., Indigenous Australian or Mesoamerican), or modern movements (e.g., perennialism) that use first-person reflection or cultivation defined under contemplative practices.

Moral functioning:

both combinations of the individual factors (parts) and the emerging overall combination (whole) of moral psychological factors operating

well with the holistic conception of **contemplative moral development** (see following sections); this helps ensure that our inquiry, although empirically tractable, is not measuring outcomes that are entirely foreign to contemplative traditions. To ground the validity of the aforementioned factors, we describe them (along with others) below, detailing the existing empirical literature regarding their distinct construct validity, as well as the inter-relationships between the factors. This will allow us to better understand what areas of our morality contemplative practices might impact, to better lay the ground for a mechanistic understanding of how they might be doing so.

Although there are hundreds of contemplative practices [12–14], we explore the multifactorial framework approach by reviewing in detail the moral research literature for one particular kind, mindfulness meditation, which is arguably the most popular class of contemplative practice in both society and science. Although the historical claim that meditation can improve our morality [38] likely has validity, several studies we review in the following sections have found the opposite and, thus, we must also remain open-minded to any moral downsides they may produce, adopting a balanced and objective view of their overall impact. This demonstrates that engaging in contemplative practices produces a complex and nuanced range of effects on how we operate morally; that is, contemplative practices influence the aforementioned moral psychological factors differently, improving some while hindering others [see Figure 1 (Key Figure)]. Furthermore, numerous factors external to, but in conjunction with, a contemplative practice, such as context or setting, can influence the moral outcome [39,40]. We suggest that contemplative science has tended to overlook this complexity due to how it has conceptualized and measured morality in a unidimensional manner.

Contemplative practices and moral development

Along with providing explicit ethical guidelines, many traditions emphasize that their practices promote a kind of contemplative moral development that involves multiple factors, including one's thoughts, intentions, emotions, behaviors, and taking responsibility acting as a dynamic causal, inter-related, and interdependent process that shapes the practitioner into becoming more (or less) moral; a whole together, not only the parts separately [8,9,41–43]. Moral improvement is trained by having practitioners carefully become aware of, reflect on, calibrate, and skillfully adjust these multiple dimensions of their moral psychology to ensure these parts operate in harmony [44,45]. Furthermore, this training involves a self-regulatory process that aims to improve positive prescriptive (i.e., approach-related, strengthened), and inhibit negative proscriptive (i.e., avoidance-related, weakened) moral functioning [46]. Practitioners endeavor to become acutely aware of how their moral responses contribute to the ill-being or well-being of others and the world around them, while also recognizing how this crucially applies to themselves, both in the present and who they become over time. Our focus here is how to marry such a conception of contemplative moral development with the imperative to empirically assess morality from a cognitive science standpoint.

Most moral research to date has focused on contemplative practices taught in secular contexts. In the attempt to become more broadly accepted in society, contemplative practices in their current secularized form, such as mindfulness meditation or yoga, have been divorced from their traditional ethical frameworks, along with the cultural, religious, contextual, and communal norms that were integrated into the practice [47,48]. These added ingredients supported ethical engagement; thus, a contested question remains concerning how secularized contemplative practices might still influence people's morality, because they were developed to improve biopsychological functions and mental health through attentional exercises or bodily awareness [49,50]. While some have argued that secularized meditation innately contains the mechanisms for morality [51], empirical research verifying such mechanisms is lacking [11], and we suggest

in a dynamic and interactive manner to interpret and respond to moral information, enabling us to function as a moral individual. This inter-related whole functions as a recursive and reciprocal process that continually changes how people perceive and interact with stimuli in their environment.

Moral functioning framework:

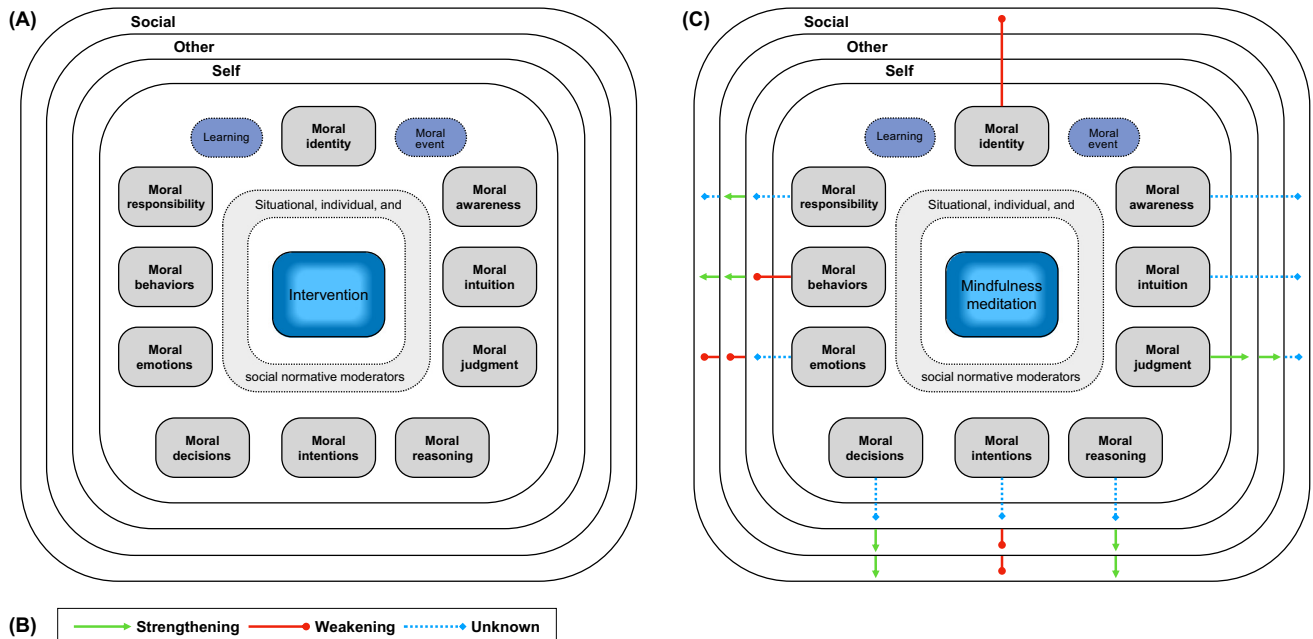
multifactor framework of moral psychological functioning adjusted for contemplative science, with the capacity to insert an intervention into the framework to assess whether it improves or hinders people's moral identity, awareness, intuitions, judgements, reasoning, decisions, intentions, emotions, behaviors, and responsibility when responses are targeted at moral information regarding ourselves, others, or issues in the social environment.

Moral psychological factors:

psychological factors that are associated with how one perceives and processes information; moral psychological factors are the individual cognitive, affective, and behavioral factors responsible for perceiving, processing, and functioning in moral contexts.

Key Figure

Visual representation of the moral functioning framework



Trends in Cognitive Sciences

Figure 1. (A) The moral functioning framework comprises four layers: (i) the Intervention Hub (center blue square), where an intervention can be inserted into the framework; (ii) Situational, Individual and Normative Moderators (inner layer; broken light-gray outline) represent external influencing variables that are largely outside the agent's control; (iii) Psychological Factors (unbroken-gray boxes) begin when a person (with their default moral identity) encounters an event (blue box) that triggers their ethical processing, which cascades through a combination of psychological factors from awareness to responsibility. The experience is integrated and updates one's moral identity model through learning (blue box) from their response to the event; and (iv) Response Outputs (unbroken outer black lines) are the outer concentric squares that represent different proximal orientations for outcomes regarding self, other, or social targets. (B) Assessment components are the elements used to indicate what effect the intervention has on specific psychological factors at different response outputs. Green arrows denote a strengthening influence (prescriptive, approach, or improved moral functioning), red arrows denote a weakening influence (proscriptive, avoidance, or hindered moral functioning) [46], and blue arrows denote an unknown influence. Arrows are placed in the appropriate concentric layer of the response output when an intervention has been found to strengthen or weaken a psychological factor. (C) When mindfulness meditation is inserted into the framework (center blue square), we can visualize and assess the overall moral functioning it could produce by identifying its strengthening and weakening influences on individual moral psychological factors at different response targets of oneself, others, or issues in the social environment. Unknown influences (broken-blue arrows) denote a lack of available empirical evidence. The framework here illustrates how mindfulness meditation is differentially impacting moral responses across multiple psychological factors and toward different targets of responding.

that we must first become clearer about what aspects of our moral psychology might be changing before being able to correctly identify those mechanisms.

Meditation, morality, and the search for cognitive mechanisms

Although we are framing our discussion around contemplative practices from a broader conceptual standpoint (Box 1), most moral research has been done in the meditation domain, particularly mindfulness or loving-kindness. To our knowledge, there is no moral research for any of the many other contemplative practices (such as centering prayer or stoicism) people engage in worldwide. Thus, taking a broad overview of the meditation field, studies have primarily examined its influence over moral cognitions on hypothetical decisions or dilemmas, self-reported moral intentions and emotions, and approach or avoidance-related moral behaviors [16,52–68].

An interesting yet understudied phenomenon emerges from these studies: one method of meditation might improve some moral psychological factors, yet have negative or no effects on others, while an alternative method of meditation can produce opposing effects. For example, mindfulness meditation has been shown to improve moral reasoning, judgments, and decisions [56–59,68] and some approach-related (e.g., helping) moral behaviors [54,69,70]. However, it appears to have a limited or no effect on one's moral identity [67] or emotions [53,55,60,61] and even negative effects on one's moral intentions [61–63] and avoidance-related (e.g., harming) behaviors [55]. Alternatively, while loving-kindness meditation may strengthen moral emotions [65], it appears to only have limited [16,66], unchanged [64], or mixed [60] effects on actual moral behavior. The contrast here is that loving-kindness meditation might be improving moral emotions but perhaps not all behaviors, while mindfulness meditation might be improving some behaviors but perhaps not all emotions. However, more experimental evidence is needed before this is concluded with certainty. We expand on these examples in the following sections when we review mindfulness meditation in detail, but the main takeaway is that separate moral psychological factors can be differentially influenced by any one method of meditation, yet another meditation method can produce opposing results.

A widespread research trend focuses on examining prosocial tendencies of meditators [69,71–73]. As we suggest in Box 2, equating morality with prosociality can limit our understanding of the true moral import of an act and hinder our efforts to understand the mechanisms whereby meditation could influence moral responding. For example, meta-analyses of mindfulness meditation have produced inconsistent findings, with some reporting positive small- to medium-sized effects for greater prosocial behaviors [71,72], while others report they have limited prosocial effects [73]. There is a concern in collapsing several of the individual psychological components outlined previously into one construct of prosocial behavior, because aggregating all effects under a singular factor of prosociality might lead to erroneous unequivocal conclusions that there is or is not one effect on morality. Thus, the conceptually ambiguous construct of prosociality [74] may contribute to some inconsistent findings in the field. By contrast, a multifactor approach allows for greater specificity of moral constructs and provides a useful step for future meta-analyses in contemplative science to become more conceptually clear.

Other common approaches that complicate interpretation include combining diverse practices under the mindfulness umbrella (e.g., dyadic communication), which has posed a problem for identifying unique effects of each practice [75]. There is also some over-reliance on hypothetical dilemmas and self-reported intended behaviors, which are of less value for predicting actual behavior both in a general population [76] and in meditators [16]. A further issue involves conflating and equating short, single-session inductions used on beginners with longer, multi-session interventions spanning several months. Beginners undergoing a single session are far removed from what most meditators consider a contemplative practice and can produce demand characteristics [77]. Therefore, stronger effect sizes for brief compared with longer practice [73] could be due to placebo and demand effects [78]. That being said, consciously committing to a long-term intervention produces its own set of demand characteristics, such as having a positive enthusiasm toward the perceived benefit of meditation. More nuance needs to be considered regarding the relative strengths and weaknesses between short- and long-term interventions when making assertions about their moral influence.

Finally, and relevant for our purposes, because research is beginning to emerge that meditation in itself can produce adverse effects on ethical processing [61–63], some suggest that specific ethical frameworks or instructions should be included for the sake of morality [79,80]. Thus, while preliminary insights into this field are emerging, we do not yet have a comprehensive account of the ways in which contemporary forms of meditation might affect practitioners' morality.

This still leaves the question about which underlying cognitive and affective mechanisms could mediate the relation to morality. Whereas several cognitive and affective mechanisms for mindfulness meditation have been implicated in action or well-being (e.g., [81,82]), there is less theoretical and empirical development of specific mechanisms that could contribute to the influence of meditation on morality. Suggestions for mechanisms from mindfulness meditation that contribute to morality include interoceptive awareness, emotion regulation, enhanced attentional capacity, change in perspective of the self [83], improved executive control and self-regulation [11], de-reification or re-perceiving, enhanced empathy [72], as well as increased sense of social emotional connectedness and positive affect, decreases in stress and negative affect, and greater trait mindfulness self-compassion [84]. However, to our knowledge, empirical research verifying these moral mechanisms is lacking [11]. Furthermore, the field has only recently begun to seriously consider how meditation-induced morality can be dependent on different methods of meditation, context and setting, individual differences in social goals, and personal moral orientations [39,40,85]. We still do not know precisely how or why (let alone if) a practice such as mindfulness meditation might make us morally better or worse.

This ambiguity constitutes a critical challenge to the field and is one of the primary drivers of this paper. We are attempting to step back to gain a better perspective to ask what aspects of our morality a contemplative practice might influence, so that we can then ask why, how, and if indeed it does influence them. The perspective we provide for answering the ‘what’ question builds on a set of already empirically validated constructs that is organized into a multifactorial framework sensitive to the kinds of contemplative moral development these practices aim to cultivate. Before reviewing the mindfulness literature in detail, we pause briefly to do such an organization to systematize their application.

Multifactorial moral psychological functioning

We have argued that the best way to review and assess the moral implications of contemplative practices is through organizing validated moral psychological factors into a multifactorial framework. Support for this approach can be found in the trend for multifactorial models that broadly attempt to represent moral functioning processes. Examples include the Integrated Ethical-Decision Making model [36] or the Social-Information Processing-Moral Decision-Making framework [37]. These models build upon valid constructs from prior developmental [86], rationalist [87], intuitivist [22], and dual-process [88] models to account for the dynamic nature of human moral psychology; they have face validity because they seek to capture our broad moral repertoire of behaviors, experience, and learning, and are predictively tractable. As such, the models are undoubtedly descriptively insightful. However, they do not offer a practical means to assess the effect of an intervention or consider how it might impact the factors in their model differently when moral responses are focused on different targets. To respond to these shortcomings, we propose to adapt a multifactorial framework with a practical means for inserting an intervention (a contemplative practice) to assess its effects on moral functioning that also accommodates how our moral responses change when they involve ourselves, others, or issues in the social environment. Additionally, the adaptation holds an empirically amenable means to better understand how contemplative practices could develop and change different factors of our moral psychology over time and, ultimately, who the moral being becomes through these practices.

Putting these components together, we can specify a **moral functioning framework** for contemplative science. The framework builds upon those previous well-established multifactor frameworks and approaches that emphasize dynamically updating moral systems [35–37,87]. The framework includes consideration for situational, individual, and social normative moderators

Box 2. A prosocial problem for contemplative science

People usually judge the morality of an act not necessarily by what someone does, but rather by why they did it; even prosocial acts are not considered good if they are perceived as being selfishly motivated [101]. Prosociality is typically defined as socially positive acts performed for the welfare of others [74,102], and is sometimes considered a proxy for morality.

While many moral acts do involve a prosocial component, prosociality is not sufficient for being moral. Many prosocial cognitions, emotions, or behaviors are morally neutral (e.g., utilitarian reasoning without an act is ineffectual); neither are all prosocial acts uniformly positive or inherently good and, sometimes, they have a 'dark side' [103]. A CEO can appear prosocial by donating large sums of money to charity to distract from his harmful business practices. Prosocial acts may even be immoral if they produce bad consequences, such as donating to a celebrity who promotes dangerous health misinformation. Accounting only for one facet of an action (prosocial donation) blinds us to the upstream causes (e.g., motivations or reasoning) and downstream events (consequences) and risks limiting our understanding of its true moral import.

Neither is prosociality necessary for morality because many moral acts conflict with, or are orthogonal to, prosociality. Whistleblowing is seen as moral but can cause social disruption and socially vilify the whistle-blower. Honesty is moral but blunt honesty can weaken social connections, and people even prefer 'prosocial liars' compared with truth-tellers [104]. Thus, prosociality is not inherently 'good'. Rather, the value of a prosocial act is contingent on the moral valence of the outcome [105] and its antecedents.

Furthermore, prosociality only involves the promotion of welfare in agents other than the actor, ignoring those acts that only involve the actor. Lying to a doctor about one's alcohol intake primarily impacts only the actor's welfare. The seemingly essential prosocial condition of being for the 'welfare of others' is not the main element in these moral events.

Hence, it is essential to view the mosaic of morality not through a monolithic concept of prosociality, but by considering the full picture of associated cognitive, affective, and behavioral antecedents and consequences accompanying moral events. While prosociality usually is positive, cognitive science should not rely solely on this concept. This view is consistent with everyday attitudes that stress alignment with motivations, actions, and consequences [106,107], as well as the contemplative conception of morality we have laid out.

as overt influences that largely fall outside the agent's locus of control [36,89,90]. We have included the ten primary psychological factors listed in the preceding text: a moral identity or self [19,20], awareness [21], intuitions [22,23], judgment [24], reasoning [25,26], intentions [27], decisions [28], emotions [29,30], behaviors [31,32], and moral responsibility [33,34]. Functioning for these factors is punctuated by moral events [91,92] and learning [93,94], which the individual may or may not be aware is occurring. The psychological processes for these factors in the framework can be differentially activated depending on whether the moral response output concerns oneself, others, or a social issue [27,35]. Finally, the framework allows for the insertion of an intervention for assessment. Therefore, the framework has four dimensions: (i) Intervention Hub; (ii) Situational, Individual, and Social Normative Moderators; (iii) Psychological Factors; and (iv) Response Output. The components of the framework are described in Table 1 and visualized in Figure 1A (Key figure).

Examining moral functioning from mindfulness meditation

This section applies the moral functioning framework to secular mindfulness meditation, providing an informative answer to the question about the moral impact of this intervention. This demonstrates how the framework differs from existing multifactor frameworks by virtue of offering a practical means to input a contemplative intervention and assess how it changes moral functioning. While we have attempted to prioritize randomized, multi-session interventions (at least 8 weeks), this review has its own limitations due to the availability of the literature (see following sections), but nonetheless serves as a useful starting point. We have chosen to examine secular mindfulness meditation because it is now extremely popular in many areas of modern life; thus, it is critical we gain information about its role in moral functioning. It is also pertinent because, although mindfulness is lauded as producing prosocial outcomes, meta-analyses into these effects have produced conflicting findings [11].

Table 1. Elements in the moral functioning framework

Factor	Definition	Refs	Relationship to other factors
Moral identity	Degree to which one's moral self-schema is prominent in an individual's overall self-concept; a group of personally morally salient associations (e.g., beliefs, values, or character) that the individual integrates into their self-concept; not a static phenomenon, but a dynamic process that unfolds over time that is continually maintained and updated through each instance of an individual's moral responses; otherwise known as a moral self	[19,20]	Intuitions [108], judgments [109], intentions [110], emotions [111], behaviors [112]
Moral awareness	Awareness (or unawareness) of moral information or an event; sensory or perceptual recognition (or lack thereof) of moral stimuli that is explicitly or implicitly processed, which forms an important first step in responding process; the capacity to detect morally salient content can also include moral sensitivity or attentiveness as extended dimensions of awareness	[21,87,92]	Identity [113], behaviors [114], emotions [115], judgment [116], decisions [117], intuitions [118]
Moral intuitions	Automatic and reflexive 'gut reactions' we have to morally salient information, giving us that immediate and intuitive 'good-or-bad, right-or-wrong' response; largely unconscious heuristics that generate our moral reactions	[22,23]	Identity [108], judgments [22,119], emotions [88], responsibility [120]
Moral judgements	Evaluation accompanied by information processing on a morally significant target; people then subsequently respond or react to the target by assigning a morally weighted attribution (e.g., blame, acceptability, or praise)	[24]	Identity [109], reasoning [121], intentions [122], emotions [123], responsibility [124]
Moral reasoning	Transitions of thought that assess moral information for its (in)consistency with other moral values, standards, principles, or norms; conscious and deliberate processing that enables one to reach a morally salient rationalization, justification, judgment, or decided outcome; evolves across multiple timescales and proximities (e.g., developmental or societal)	[22,26,86]	Judgments [121], intuitions [125,126], emotions [127], behaviors [128]
Moral intentions	Commitment or intention to act according to one's moral values or choices; any intention or motivation leading up, or in response, to morally salient information, regardless of whether the agent is aware of their 'intentionality'; also known as moral motivations, motives, or desires	[18,27,87]	Identity [110], intuitions [129], judgments [130], emotions [131], behaviors [27,87]
Moral decisions	Any choice made in response to moral information that includes weighing up trade-offs between benefit or harm, rewards or consequences; involves the ability to choose a course of action from multiple alternatives within a system of norms and values that guide further personal and social navigation	[28,37]	Identity [132], judgments [133], emotions [134], behavior [135]
Moral emotions	Affective implications from exposure to morally salient information, which can either motivate and propel us to act, or, arise as a reaction in response to an event; enables individual to evaluate their own or others' acts when they have, or have not, adhered to a moral standard	[29,30]	Identity [111], judgments [123], intentions [136], behaviors [137,138]
Moral behaviors	Actions that are subject or judged according to generally accepted moral norms of behavior and, hence, occur within the context of broader social prescriptions; anything from automated physiological reactions to a calculated series of complex activities that can be intended or unintended; generally split into proscriptive (should do) and prescriptive (should not) categories	[31,32]	Identity [112], intentions [46], decisions [139], reasoning [128], emotions [137,138]
Moral responsibility	Calculations made on an event in an attempt to explain or justify causality, controllability, volition, and intent, with the subsequent attribution of accountability or ownership for the consequences from moral responses resulting from oneself or others	[33,34]	Identity [132], intuitions [120], judgments [130], emotions [140]
Process points			
Moral event	Stimuli in the environment the agent encounters that carry moral salience	[87,91,92]	
Learning	Understanding and internalizing the impacts of one's moral responses, which can impact one's moral capacity for future responses and subsequent functioning; has a large role in continually updating one's moral model of oneself; integration of exposure to a moral experience	[36,93,94]	
Response output			
Self-related	Way in which people morally relate and respond to moral information when it pertains to themselves	[17,27,35]	
Other-related	Way in which people morally relate and respond to others and their behavior	[17,27,35]	
Social-related	Way in which people morally relate and respond to events concerning both in and outgroups and can extend to issues in the broader social context	[17,27,35]	

Table 1. (continued)

Factor	Definition	Refs	Relationship to other factors
Context			
Situational, individual, and social normative moderators	Situational variables include the moral issue at hand (e.g., its intensity or complexity), environment/organization (including peers), and one's personal situation (e.g., need for gain, time pressure); individual factors can include variables such as demographics, personality, experience, integrity capacity, and moral character disposition [141]; moral norms (social standards or expectations of behavior) coloring the landscape are also antecedents preceding psychological processes	[36,89,90]	

The first step to assess mindfulness meditation in this framework is to review the literature across all the moral psychological factors, which are provided in Table 2. These studies reveal that, compared with various control conditions, mindfulness meditation appears to improve some cognitive factors, strengthening moral reasoning and decisions toward others (cooperating with another who offers unfair allocations [68], or how one agent should act toward another [57]) or social targets (demonstrating about government policy [57] or an organizational issue [56]), and can reduce ‘slippery slope’ effects, where moral decisions become more desensitized over time (deciding to harm another through electric shocks [59]). Moral judgments appear to improve regarding just or unjust treatment toward themselves (judging how justified they would be for stealing after being treated unfairly) and how another treated them (judgments about others’ critiques of their performance [95]) and again in ‘slippery-slope’ judgments (blameworthiness of giving electric shocks to another [59]). However, in some cases, moral judgments of the severity of a transgression regarding others’ harmful behavior remain unchanged, but attributions of moral responsibility could become less severe (judging the severity of another’s act, then ascribing them prison sentences [58]). However, mindfulness meditation appears to have a neutral or potentially hindering effect on moral emotions, which remain unchanged when directed toward another individual (anger toward a provocateur, no empathy for a prisoner [53,55,60] or someone in distress [63]), and can attenuate emotions and intentions toward others and social-related issues (helping others in distress in low-cost scenarios [63], willingness to help a child [67], guilt and reparative intentions after wronging a friend, social attitudes toward meat-eating reduction [61,62]). It also has neutral outcomes with respect to moral identity [67].

Mindfulness meditation appears to differentially modulate moral behavior when it is self, other, or socially focused. Mindfulness meditators still engage in negative self-focused moral behavior of cheating on an anagram test [96]. Findings are mixed for other-focused behaviors, suggesting they might be improved (offering assistance to someone in pain [52,54], giving money to a homeless person [79] or reduced aggression toward a provocateur [53]) or hindered (aggressive behavior toward a provocateur [55]). Finally, mindfulness meditation improved behaviors toward a social group (avoiding cheating to benefit the group [97], increased real-monetary donations to cancer research [70]). To provide an intuitive portrayal of mindfulness’ overall moral functioning, Figure 1C illustrates a representation of the framework with colored arrows indicating the effects. This multifactorial review now reveals that mindfulness meditation may improve certain moral psychological factors, while simultaneously producing neutral or negative effects on others.

Before casting broad aspersions on the moral impact of mindfulness, it is important to consider the quality of the studies reviewed here. Similar to any other experimental field, mindfulness research has common experimental issues that we alluded to previously (e.g., mixing methods, hypothetical dilemmas and self-reported intended behaviors, and short vs. longer-term practice), which can lead to questionable findings [75]. Many studies we included here are subject to some of these limitations, such as including findings from single-session (i.e., [61,62,70,95–97]) and longer-term interventions. We outline in Table 2 which studies were randomized, the types of measure used,

Table 2. Inserting empirical literature on mindfulness meditation into the moral functioning framework^{a,b}

Moral factor	Output	Impact	Refs	Intervention	Measure	Design	Outcome
Moral identity	Self	–	[67]	MSI, MM	Self-importance moral identity questionnaire (SIMI-Q)	RCT, SR	Identity
	Other	0					
	Social	0					
Moral awareness	Self	0					
	Other	0					
	Social	0					
Moral intuition	Self	0					
	Other	0					
	Social	0					
Moral judgment	Self	+	[95]	SSI	Judging whether (not) stealing an item after unfair treatment is justified (four-item intent-to-retaliate questionnaire)	RCT, SR	Fairness, justice
	Other	+	[95]	SSI	Judgments on others' critiques of participant's performance	RCT, SR	Fairness, justice
		+	[59]	MSI, MM (Y, LK)	Judgments on others' electric shock/monetary payoff deliverance	RCT, OR	Punishment
	Other	–	[58]	MSI	Judging severity of harm-based social norm violations (nine-point questionnaire)	RCT, SR	Harm
	Social	0					
Moral reasoning	Self	0					
	Other	+	[57]	MSI, MM (Y, LK)	Hypothetical dilemma reasoning (DIT-2)	SR	Fairness, justice, harm
		+	[56]	MSI	Kohlberg Moral Reasoning Interview	RCT, SR	Fairness, justice, harm
	Social	+	[57]	MSI, MM (Y, LK)	Hypothetical dilemma reasoning (DIT-2)	SR	Fairness, justice, harm
		+	[45]	MSI	Kohlberg Moral Reasoning Interview	RCT, SR	Fairness, justice, harm
Moral intentions	Self	0					
	Other	–	[67]	MSI, MM (SC)	Intentions to help a child (questionnaire with seven-point scales)	RCT, SR	Intended help
		–	[61]	SSI	Willingness to engage in reparative behavior after wrongdoing	RCT, SR	Intended reparations
		–	[62]	SSI	Intended reparative behavior after hypothetical wrongdoing (spend money on a present after wronging a friend)	RCT, SR	Intended reparations
		–	[63]	MSI	Willingness to help distressed person at high or low personal cost (scenarios and questionnaires with seven-point scales)	RCT, SR	Intended help
	Social	–	[61]	SSI	Willingness to engage in reparative behavior after hypothetical social wrongdoing	RCT, SR	Intended reparations
		–	[62]	SSI	Intention to purchase fair-trade products and community volunteering	RCT, SR	Intended help
		+	[70]	SSI	Intentions to reduce meat consumption after considering societal and harm-based costs	RCT, SR	Intended harm reduction
Moral decision	Self	0					
	Other	+	[57]	MSI, MM (Y, LK)	Deciding importance of reasoning response (DIT-2)	SR	Fairness, justice, harm
		+	[59]	MSI, MM (Y, LK)	Deciding trade-offs of electric shocks or money for self	RCT, OR	Harm

Table 2. (continued)

Moral factor	Output	Impact	Refs	Intervention	Measure	Design	Outcome
Moral decision	Other	+	[68]	MSI, MM (Y, LK)	Deciding to accept or reject unfair offers in Ultimatum game	RCT, OR	Cooperation
	Social	+	[57]	MSI, MM (Y, LK)	Deciding importance of reasoning response (DIT-2)	SR	Fairness, justice, harm
Moral emotions	Self	0					
	Other	–	[55]	MSI	Retaliatory paradigm, noise blasts (Aggressive Motives Scale; AMS)	RCT, SR	Anger
		–	[60]	MSI	Empathy, sympathy, optimism, and forgiveness toward a remorseful prisoner (coding letter writing)	RCT, OR	Compassion/helping
		–	[53]	MSI	Retaliatory paradigm, hot sauce: five-point scale of anger	RCT, SR	Anger
		–	[61]	SSI	State guilt after recalling personal wrongdoing (guilt subscale of the PANAS-X)	RCT, SR	Guilt
		–	[63]	MSI	Self-reported empathy toward person in distress (questionnaire with seven-point scale)	RCT, SR	Empathy
	Social	–	[62]	SSI	Guilt conscious after watching negative consequences meat consumption (questionnaires with seven-point scales)	RCT, SR	Guilt
Moral behavior	Self	–	[96]	SSI	Individual level cheating on anagram test (CAM carbonless anagram method)	OR	Cheating
	Other	+	[53]	MSI	Retaliatory paradigm, hot sauce (reduced retaliatory aggression)	RCT, OR	Aggression
		+	[52]	MSI, MM (CP)	Offering seat to someone in pain	RCT, OR	Helping
		+	[54]	MSI	Offering seat to someone in pain	RCT, OR	Helping
		+	[79]	MSI, MM (EI)	Real monetary donations to charity (habitat for humanity, but aimed at one person's house building)	RCT, OR	Giving
		–	[55]	MSI	Retaliatory paradigm, noise blasts (Aggressive Motives Scale; AMS)	RCT, SR	Anger
	Social	+	[97]	SSI, MM (LK)	Differences in cheating between actual and self-reported performance on Advanced Progressive Matrices (APM)	RCT, OR	Cheating
		+	[70]	SSI	Real monetary donations to charity (cancer research)	RCT, OR	Giving
Moral responsibility	Self	0					
	Other	+	[58]	MSI	Punishment attributions (years of prison sentence) for harm-based social norm violations	RCT, SR	Punishment norm
	Social	0					Transgression

^aNumeric symbols denote strengthening (+) or weakening (–) effects, or no available empirical evidence (0) in the impact column directed at self, other, or social targets in the output column.

^bAbbreviations: CP, compassion meditation; EI, ethical instruction; LK, loving-kindness meditation; MM, mixed methods; MSI, multi-session intervention; OR, observer report; RCT, randomized control trial; SC, self-compassion; SR, self-report; SSI, single-session intervention; Y, yoga.

multi- or single-session interventions, and whether the design mixed meditation methods. We recognize that, by using a multifactorial framework, this review has its own limitations; we hope that it is clear we are not making a conclusive claim about what mindfulness meditation does to all moral functioning. Rather, with this framework, we can take an open-minded approach, based on the existing literature (with its limitations), which provides a nuanced and, therefore, potentially more informative and productive answer to the question of the moral impact of mindfulness meditation.

What can a moral framework accomplish for contemplative science?

As highlighted by the mindfulness example mentioned in the preceding text, the multifactorial approach allows us to answer the question of which moral factors a contemplative intervention

benefits or hinders. Without using a multifactor approach, it will not be obvious which aspects of our moral functioning a contemplative practice might be helping or harming, or where there are gaps in the literature (e.g., see moral awareness and intuitions in Table 2). This more nuanced understanding of the moral import of these now very widespread practices is vital, and contemplative science will benefit from becoming more attuned to their various moral implications.

There are a few unique features of the moral functioning framework. First, a contemplative practice (or indeed any other intervention) can be inserted into it to assess the impact of the practice on various individual moral psychological factors. Second, it accounts for how moral responses change when directed at issues that involve oneself, others, or the social environment, which are important dimensions of contemplative and everyday moral functioning. Previous descriptive frameworks [36,37,87] overlooked these dimensions to focus instead on the psychological components and their sequential order. Most importantly however, when all the elements of the framework are considered together, this provides a more accurate picture of practitioners' moral functioning and, as such, offers a clearer understanding of the overall moral influence of said practices on people.

While the visual representation of mindfulness meditation (Figure 1C) offers a snapshot of agents at a particular time, the framework can also capture how practitioners' moral functioning can change through the dynamic aspect of contemplative moral development. Repeating assessment of a contemplative practice at different timepoints (e.g., months to years) can provide a picture of how individual factors and overall functioning change with time. For example, with mindfulness meditation, responding with immoral self-focused behaviors [96] might improve with longer-term practice, as was found for behaviors focused toward others [52–54,70]. Using the framework at different timepoints would highlight adjustments to individual moral psychological factors and, therefore can account for dynamic, constantly updating moral functioning that these practices claim to develop. Therefore, the framework can be used to reveal how the practices might change moral functioning over time and, in effect, an agent's moral model of themselves.

Finally, there are hundreds of other forms of meditation beyond mindfulness, and an even broader field of contemplative practice, like Sufi whirling, stoic reflections, or psychedelic journeys, which people regularly practice that produce vastly different states of experience [12–14]. However, their moral influence has not yet received empirical attention. Recall that the factors included in the moral functioning framework were chosen based on an important criterion: each factor and its response output have a pre-existing means of scientific measurement. To bridge the gap between contemplatives' descriptions of the effects their practices produce and empirical inquiry into their moral effects, the framework could be used as a prospective tool to help develop systematic research projects. Prospective use of the framework would be based on textual evidence from contemplative traditions and phenomenological reports from practitioners, essentially hypothesizing what the moral effects would be on each moral psychological factor at different response orientations. The framework can then be used to combine a battery of psychological, behavioral, neuroscientific, or physiological measurements. To design a systematic research project aimed at examining an understudied contemplative practice within the moral domain, it would be beneficial to include all the factors of the framework to gain a comprehensive picture of practitioners' overall moral functioning.

Concluding remarks

The varieties of contemplative practices we now have available are likely changing our morality in numerous ways, hopefully for the better; the concern is that it could be changing some aspects for the worse. Using a multifactorial moral functioning framework specifically adapted for

Outstanding questions

What are the dose-dependent effects of different contemplative practices on moral functioning? For example, does more meditation make you more moral?

What factors should be included, or dropped, from the moral functioning framework to enhance the concept of moral functioning? Does including/excluding these factors give us a better picture of what constitutes a 'moral-being'? More conceptual analysis and scientific research will be required to address this.

Can the framework be used to identify strengths and weaknesses from diverse contemplative practices, and can it help to combine them to improve the moral functioning of practitioners? Would this approach optimize moral functioning?

The moral impact from a vast range of contemplative practices remains understudied; thus, how might they differentially modulate the individual factors of our moral psychology?

Which contemplative practices may be morally beneficial or detrimental for certain populations, such as adolescents or prisoners?

Can the moral functioning framework help clarify the conceptual ambiguity of prosociality? How does prosociality align with the framework? Does it only pertain to the outer sections (others, social) and neglect the self-related responses? Would the construct of prosociality benefit from the inclusion of more antecedent and subsequent moral psychological factors as the framework outlines?

What are gaps in the literature that we can identify using the moral functioning framework that need to be addressed? We used the framework to reveal the gaps in the research on mindfulness meditation. If we insert another contemplative practice (e.g., transcendental meditation, yoga) into the framework, what areas remain unexamined?

What interventions beyond contemplative practices could be used with the moral functioning

contemplative practices, we have shown how contemplative science can address this issue through systematically investigating and assessing these practices in a comprehensive, empirically informed manner that aligns with the contemplative conceptualization of moral agents and acts. Adopting this kind of approach should then facilitate addressing open questions about the relationship between contemplative practices and our moral lives (see [Outstanding questions](#)). For the important case of mindfulness meditation, the answer is that, indeed, some factors are positively improved whereas others are not.

Nobody is arguing that we put the brakes on contemporary forms of contemplative practice. We believe their impact can positively permeate multiple areas of our lives, from our relationships, how wisely and calmly we deal with problems, our contentment levels, all the way to how we ultimately understand our existence. We are in no way belittling these aspirations or suggesting these aspects are not important. Contemplative practices have a major role in our well-being; the question we hope that this article stimulates interest in is what exactly these practices are doing to our 'moral-being'?

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Declaration of interests

None declared by authors.

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framework? For example, what would inserting a well-being intervention, such as cognitive behavioral therapy for substance abuse, reveal about its influence on moral functioning? Or an ethics class? An organizational peer mentoring system? A government policy to reduce domestic violence? What is the upper limit of types of intervention that the framework could evaluate?

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