WHAT IS A MANTRA?

What is a Mantra? Guidance for Practitioners, Researchers, and Editors

Supplemental Materials
accompanying a main article
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American Psychologist

CONTENTS

Section 1
Expanded Tables

Table S1
Mantra-Utilizing Intervention Studies ($n \geq 123$), Expanded Table S2

Table S2
Non-Mantra Intervention Studies ($n \geq 22$), Expanded Table S3

Section 2
Multi-National Empirical Interest in Mantra Repetition S4

Section 3
Publications Using Discrepant Terminology S5

Section 4
Interventions for Loving-Kindness Meditation or Petitionary Prayer S6

Section 5
Processes that Mediate Effects from Mantra Repetition: Overview S8

References (Supplemental Materials) S11
WHAT IS A MANTRA?

Section 1: Expanded Tables

Table S1. Mantra-Utilizing Intervention Studies (n ≥ 123), Expanded Table

<table>
<thead>
<tr>
<th>Categorya</th>
<th>Name or source of intervention (with citations to examples)</th>
<th>Mantra Match Oddsb</th>
<th>Studies (n)c</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portable Mantra Repetition</td>
<td>Mantram Repetition Program (MRP) (e.g., Bormann et al., 2018; Hulett et al., 2023; Yong et al., 2018), list-guidedd</td>
<td>VH ≥19e</td>
<td></td>
</tr>
<tr>
<td>“ “</td>
<td>Culturally anchored adaptation of MRP (El-Salamony &amp; El-ayari, 2023)</td>
<td>VH 1</td>
<td></td>
</tr>
<tr>
<td>“ “</td>
<td>Passage Meditationf (PM) eight-point program (Oman et al., 2006; Oman &amp; Bormann, 2018; Oman &amp; Bormann, 2021), list-guidedd</td>
<td>VH 9</td>
<td></td>
</tr>
<tr>
<td>“ “</td>
<td>Culturally anchored adaptation of PM (Elnehrawy &amp; Zewiel, 2021)</td>
<td>VH 1</td>
<td></td>
</tr>
<tr>
<td>Mantra Sitting Meditationg</td>
<td>Transcendental Meditation (TM) (Orne-Johnson et al., 1977-2013; Orne-Johnson, 2021)</td>
<td>XH ≥79b</td>
<td></td>
</tr>
<tr>
<td>“ “</td>
<td>Meditation-Based Lifestyle Modification (Bringmann et al., 2021), list-guidedd</td>
<td>VH 1</td>
<td></td>
</tr>
<tr>
<td>“ “</td>
<td>Single assigned mantra (spiritually derived), such as the Jesus Prayer (Rubinart et al., 2017), “shantih” (Boswell &amp; Murray, 1979), “maranatha” (Dunne et al., 2019), or “Om” (Heide et al., 1980; Mishra et al., 2017)</td>
<td>XH 4</td>
<td></td>
</tr>
<tr>
<td>“ “</td>
<td>Standardized Meditation (American Meditation Society) (Anderson et al., 1999)</td>
<td>VHf 1</td>
<td></td>
</tr>
<tr>
<td>Mantra Integration</td>
<td>Formal and Informal use of Jesus Prayer (Knabb &amp; Vazquez, 2018)</td>
<td>XH 1</td>
<td></td>
</tr>
<tr>
<td>Mantra Chanting</td>
<td>Maha Mantra chanting (Wolf &amp; Abell, 2003)</td>
<td>XH 1</td>
<td></td>
</tr>
<tr>
<td>“ “</td>
<td>Islamic Dhikr (Roslan et al., 2022; Sulistyawati et al., 2019)</td>
<td>VH ≥2i</td>
<td></td>
</tr>
<tr>
<td>“ “</td>
<td>Maha Mrtyunjaya Mantra chanting (Raghuwanshi et al., 2022)</td>
<td>C 1</td>
<td></td>
</tr>
<tr>
<td>“ “</td>
<td>“Om” chanting (Perry et al., 2023)</td>
<td>C 1</td>
<td></td>
</tr>
<tr>
<td>“ “</td>
<td>Kirtan Kriya (Hemmeghan et al., 2021; Moss et al., 2012)</td>
<td>C 2</td>
<td></td>
</tr>
</tbody>
</table>

aCategories reflect how interventions incorporate mantras; they are provisional, subject to refinement.
bMantra Match Odds is a provisional and heuristic rating, coded certain (C), extremely high (XH), very high (VH), high (H), medium (M), low (L), or zero (Z), of the likelihood that the intervention’s matching procedure will result in a typical US participant choosing a phrase for repetition that would meet spiritual and traditional criteria for being a mantra.
cNumber of intervention studies identified at time of publication (without systematic search).
dList guided = uses a list-guided self-chosen mantra, as explained in text.
eEstimate of at least 19 MRP studies obtained from Hulett and colleagues (2023), excluding Passage Meditation studies.
fPassage Meditation is a method involving 8 practices or points, three of which, including mantram repetition, were used as the basis of Mantram Repetition Program (see Oman & Bormann, 2021).
gA potential additional intervention in this area is the Sahaj Samadhi taught by the Art of Living Foundation, although the two relevant empirical studies cited by Álvarez-Pérez and colleagues (2022) have now been retracted.
hEstimate of at least 79 TM intervention studies on therapeutic use in healthcare computed from Ospina and colleagues (2007), Table G6 (p. G8) as 79=38 randomized controlled trials +22 non-randomized controlled trials +19 before-and-after studies.
iEstimate of Mantra Match Odds for Standardized Meditation were uncertain due to difficulties in obtaining a detailed description of the intervention.
jAdditional non-English publications have also reported Dhikr intervention studies (see review by Zahraa & Sulistyarin, 2023).
**Table S2. Non-Mantra Intervention Studies (n ≥ 22), Expanded Table**

<table>
<thead>
<tr>
<th>Categorya</th>
<th>Name or source of intervention (with citations to examples)</th>
<th>Mantra Match Oddsb</th>
<th>Studies (n)c</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spiritual Word</td>
<td>Centering Prayer** (Eros &amp; Plante, 2023; Ferguson et al., 2010; Fox et al., 2016; Johnson et al., 2009) and Centering Meditation (Dorais &amp; Gutierrez, 2021a, 2021b; Dorais et al., 2022; Dorais et al., 2024)</td>
<td>M</td>
<td>≥8</td>
</tr>
<tr>
<td>Sitting meditation on chosen/assigned-phrase</td>
<td>Carrington-derived (Lehrer et al., 1980; Murphy et al., 1986)</td>
<td>M</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>“Jyoti meditation”** (Jeitler et al., 2015; Michalsen et al., 2016)</td>
<td>L</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>“Benson-derived (Kirsch &amp; Henry, 1979; Kirkland &amp; Hollandsorth, 1980; Manocha et al., 2011; Parker et al., 1978)</td>
<td>L</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>LeShan-derived (Severtsen &amp; Bruya, 1986)</td>
<td>L</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Listed ad hoc spiritual phrase (Wachholtz &amp; Pargament, 2005, 2008)</td>
<td>Z</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Listed secular phrase (Corney et al., 2023)</td>
<td>Z</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Cayce-derived (Puryear et al., 1976)</td>
<td>Z</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>Tibetan Sound Meditation (Milbury et al., 2013)</td>
<td>Z</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: We were unable to obtain sufficient information to categorize Vaccarino and colleagues’ (2013) “Consciously Resting Meditation,” which supplies little information about the repeated sounds, other than that the intervention has “similarity to the TM program,” and the sounds “have no meaning, but their quieting effects have been known for thousands of years” (p. 592) (this study was included in the review by Álvarez-Pérez et al., 2022).

*aCategories reflect how interventions incorporate the repeated word, phrase, or sound; they are provisional, subject to refinement.

bMantra Match Odds is a provisional and heuristic rating, coded certain (C), extremely high (XH), very high (VH), high (H), medium (M), low (L), or zero (Z), of the likelihood that the intervention’s matching procedure will result in a typical US participant choosing a phrase for repetition that would meet spiritual and traditional criteria for being a mantra.

cNumber of intervention studies identified at time of publication (without systematic search).

dCentering Prayer was categorized for present purposes based on the mix of traditionally-rooted and more novel prayer words suggested by Keating (Keating, 1986/1997, p. 43; 1998, p. 131), including: God, Jesus, Spirit, Abba, amen, peace, glory, love, faith, open, presence, calm, yes, trust, silence, stillness.

eRegarding non-mantra categorization of Jyoti meditation, see supplementary materials, Section 3.
WHAT IS A MANTRA?

Section 2: Multi-National Empirical Interest in Mantra Repetition

Mantra-inclusive interventions have been empirically studied on every continent apart from Antarctica and South America, demonstrating their wide cross-national and cross-national interest. This section supplies sources to verify or further investigate this phenomenon.

Transcendental Meditation (TM) has been studied for its mental health effects in countries that include the United States, Canada, Germany, Ireland, the Netherlands, Sweden, Australia, New Zealand, India, Israel, and South Africa (information extracted from Ospina et al., 2007, Tables G1 and G6), and Mexico (Vela-Valenzuela et al., 2021). In South America, although intervention studies have not been identified, observational studies of TM meditators have been published (e.g., Fergusson et al., 2023a, 2023b).

TM mental health intervention studies noted above are cited in Ospina and colleagues (2007) with the following reference list numbers for each country: Germany (942, 945), Ireland (392), Netherlands (974), Sweden (261), Australia (986, 996), New Zealand (429, 1002, 1005), India (295, 796, 814, 815, 816, 850), Israel (291), South Africa (86), Canada (189, 780, 782, 787, 793), and the United States (78, 171, 186, 187, 188, 190, 205, 206, 210, 220, 221, 252, 259, 267, 270, 271, 279, 282, 289, 292, 293, 309, 311, 319, 324, 407, 418, 424, 433, 440, 463, 471, 478, 505, 518, 519, 528, 533, 538, 545, 557, 561, 587, 659, 662, 674, 677, 683, 705, 709, 714, 733, 750, 758, 759, 769).

Besides receiving empirical study in the United States and some of the other countries listed above, other mantra-inclusive interventions besides TM have been studied in additional countries that include Spain (Rubinart et al., 2017), Egypt (Elnehrawy & Zewiel, 2021; El-Salamony & El-ayari, 2023), Malaysia (Roslan et al., 2022), Indonesia (Sulistiyawati et al., 2019), and Korea (Kang & Yong, 2019; Yong et al., 2011; Yong et al., 2018).
WHAT IS A MANTRA?

Section 3: Publications Using Discrepant Terminology

This section summarizes the tensions observed between this article’s proposed terminology and empirical publications to date in the mantra and mental health literature. Publications addressed in this section comprise all those included in two recent systematic reviews of mantra repetition in mental health (Álvarez-Pérez et al., 2022; Lynch et al., 2018), plus additional relevant publications that came to the author’s attention when preparing the article.

Of the two recent systematic reviews of diverse methods of mantra repetition, the review by Lynch and colleagues (2018) is aligned with our proposed terminology. However, the terminology used by Álvarez-Pérez and colleagues (2022) is discrepant in several respects. First, as described in the present article’s main text, the review acontextually and misleadingly asserts that Transcendental Meditation (TM) uses “non-religious mantras” (p. 2). By our definitions, the review also misclassifies several studies that did not describe themselves as mantra studies, and made no attempt to match all participants with valid mantras. Studies misclassified include many of those listed in Table 2 (Kirkland & Hollandsworth, 1980; Kirsch & Henry, 1979; Lehrer et al., 1980; Manocha et al., 2011; Murphy et al., 1986; Parker et al., 1978; Puryear et al., 1976; Wachholtz & Pargament, 2005, 2008). An earlier review of meditative practices by Ospina and colleagues (2007) also problematically extended the category of mantra meditation more widely than warranted by the present paper’s definitions.

Turning now to individual research studies, language significantly in tension with this article’s proposed definitions is apparent in only two research reports mentioned in Tables 1 or 2, or listed in recent reviews. These two studies were by the same team of researchers (Jeitler et al., 2015; Michalsen et al., 2016) and both evaluated the same underlying intervention, Jyoti meditation, which possesses laudable features and is adapted from a spiritual tradition (Singh, 1996). Both studies explain that the phrase for repetition was “of individual choice,” “should have a pleasant connotation or meaning with regards to the general personal or spiritual background,” and that the chosen phrase “was known only to the participant himself/herself” (Jeitler et al., 2015, p. 79; see also Michalsen et al., 2016, p. 80). The reports do not state that participants received any assistance in choosing sanctified phrases grounded in tradition, nor do they offer any data about what phrases were actually chosen. Lacking any further information, we have classified the studied Jyoti meditation interventions as possessing low (L) likelihood of matching a participant with a mantra that is valid as defined in this article. To have been aligned with our proposed definitions, the research reports should therefore not have characterized the phrases for repetition as “mantras.” Instead, each report states that participants were asked to “repeat a silent mantra” (Jeitler et al., 2015, p. 79; Michalsen et al., 2016, p. 80).
Section 4: Interventions for Loving-Kindness Meditation or Petitionary Prayer

Substantial empirical research has focused on two other types of interventions that possess spiritual connotations, and may at times involve repetition of phrases. The published empirical literature on these interventions generally does not refer to the repeated phrase as a “mantra,” and this section argues that such usage is correct and consistent with the paper’s proposed definitions.

Loving-kindness meditation interventions. Meditation interventions that directly seek to cultivate kindness or compassion have received considerable empirical attention in recent years (e.g., Galante et al., 2014; Lv et al., 2020; Zheng et al., 2023). These methods sometimes involve repeating a so-called “blessing phrase,” such as “may you be happy,” or “may you be free from suffering, may you become happy,” that represents the attitude to be cultivated (Zheng et al., 2023, p. 1022). In many of these methods, the beneficiary for the blessing is gradually shifted from “easy targets” (e.g., oneself or friends) to more difficult targets (e.g., enemies), or to all beings. Blessing phrases therefore generally express a specific benevolent intention towards one or more living beings, usually without reference to the source of the blessings. In contrast, mantras generally represent the invocation of a divinity or higher realities, usually without reference to any specific type of blessing.

Perhaps unsurprisingly, therefore, the empirical literature on loving kindness and other compassion meditations seldom if ever mentions mantras when describing the blessing phrases used in the interventions. For example, the word “mantra” is unmentioned in most systematic reviews and meta-analyses of these interventions (e.g., “mantra” is never mentioned in Galante et al., 2014; Lv et al., 2020; Shonin et al., 2015; Zeng et al., 2015; Zheng et al., 2023; Zhou et al., 2023). Nor does the word “mantra” appear commonly in highly-cited individual studies (e.g., Carson et al., 2005; Fredrickson et al., 2008) (Hutcherson et al., 2008). For all of these foregoing reasons, we suspect that blessing phrases used in loving-kindness and compassion meditation interventions have rarely if ever matched the proposed criteria for being called a “mantra.”

Petitionary prayer interventions. “Simply said, prayers of petition ask for something” (Hood et al., 2009, p. 468). In prayer typologies, therefore, prayers of petition are understood as “fundamentally a request made of God for something specific believed to be good by the one praying” (Stump, 1979, p. 81). In contrast, a prayer involving “praise, adoration, thanksgiving does not consist in requests and is not included under petitionary prayer [categories]” (p. 81).

A mantra, as a symbol expressing the highest reality, does not express any request that is specific to a person’s life-circumstances. Perhaps for this reason, recitation of a mantra is seldom if ever interpreted as a form of petitionary prayer, despite the fact that the repetition of a mantra may sometimes be interpreted by adherents as a non-specific prayer for God’s presence, or blessings, or closeness.

In view of the foregoing distinctions between mantras and petitionary prayers, it is not surprising that the empirical literature on petitionary prayer seldom if ever refers to mantras. The largest empirical literature on petitionary prayer interventions concerns what is called distant intercessory prayer, petitions offered at a distance on behalf of other people (such studies are controversial in part because of the absence of plausible scientifically well-established mechanisms). Several reviews and meta-analyses of distant intercessory prayer do not use the word “mantra” in describing reviewed studies, apart from its incidental use as an acronym (Masters et al., 2006; Masters & Spielmans, 2007; Roberts et al., 2009; Simão et al., 2016). A smaller body of empirical intervention research has focused on intercessory petitionary prayers on behalf of people with whom the person praying is in social contact. Such practices are sometimes called proximal intercessory prayer (Oman, 2018). Research on these studies, too, seldom if ever uses the word “mantra” (e.g., Brown et al., 2010; Cornelius-White & Kanamori, 2023; Lambert et al., 2010; May et al., 2020).
WHAT IS A MANTRA?

Another distinction between mantra repetition interventions and petitionary prayer interventions is that few if any petitionary prayer study protocols specify that the same petitionary prayer phrase should be used repeatedly. Quite commonly, the details of words used in the offered prayers are not described, perhaps because the precise wording was left to the individuals offering the prayers (e.g., May et al., 2020). For all of these foregoing reasons, we suspect that phrases used in petitionary prayer studies will rarely if ever match the proposed criteria for being called a “mantra.”

Caveat and future directions. Although mantras have to date seldom if ever been mentioned or systematically employed in interventions for loving kindness meditation or petitionary prayer, it should be noted that many or perhaps most of the corresponding intervention protocols leave some degree of autonomy for the individuals engaging in the meditations or offering the prayers. It is therefore possible that some of these individuals may have included forms of mantra repetition intermittently into their activities, as a way to enlist assistance or calm and recenter their minds for greater concentration and effectiveness in their primary activity of praying or meditating. That is, as a brief preparation or restrengthening for their recitation of blessing phrases or petitionary prayers, some individuals could on their own have recited different phrases that meet the criteria proposed for a mantra. Outside of the empirical literature, for example, repetition of the well-known Buddhist “traditional mantra, the Six-Syllable prayer,” Om mani padme hung, has been proposed as one of several “tools” for a powerful system of loving-kindness meditation (Thondup, 2015, pp. 32, 34). Similar attention to bona fide mantras could potentially be integrated into empirical research, as part of either intervention or reporting protocols. In such a case, even though blessing phrases and petitionary prayers would remain distinct from mantras, mantras as mantras could become relevant to these classes of interventions.
WHAT IS A MANTRA?

Section 5: Processes that Mediate Effects from Mantra Repetition: Overview

Mantra interventions are drawing sustained interest because their repetition as embedded within various interventions is understood as beneficially and causally affecting outcomes of interest, especially health. The causal pathways through which mantra repetition provides such benefits accordingly hold interest for studying, guiding, and refining mantra interventions for various populations. This section offers additional perspectives and sources for conceptualizing and investigating these causal pathways, supplementing the article’s main text. After recapping several varying dimensions through which investigators may approach questions of mediation of effects from mantras, we sketch relevant literatures regarding indigenous perspectives and evidence from empirical mediation studies.

Questions of mantra causal pathways may be approached from perspectives that vary on several different dimensions. The main article directly or indirectly alluded to at least five partially orthogonal dimensions of choice in how to approach questions of mediating processes. Investigators may seek to identify

D1) the added-value causal effects resulting from repeating a spiritual mantra (i.e., a mantra as defined in this paper), as well as the more restricted causal effects resulting from repeating even a neutral phrase that lacks special spiritual meaning;

D2) views from established theory, as well as views arising from empirical studies of mantras;

D3) modern psychological and social scientific perspectives, as well as traditional cultural, philosophical, and theological theories and evidence (e.g., Sisemore & Knabb, 2020);

D4) causal effects from repeating a mantra “portably” throughout the day, as well as causal effects from repeating a mantra as a key component of sitting meditation, or some other structured practice (e.g., chanting);

D5) interactive causal effects that arise from repeating a mantra in the context of adherence to various other sets of practices, ranging from orthodox religious engagement (Ware, 1974; Schimmel, 1975; Tulpule, 1991), to Meditation-Based Lifestyle Modification (Bringmann et al., 2021), to Passage Meditation (Oman et al., 2006; Oman & Bormann, 2021), to the Mantram Repetition Program (Bormann et al., 2018).

As the main article’s primary concern is to clarify definitions, it emphasizes sources of added value from repeating bona fide mantras versus other phrases (D1, the first dimension listed above), along with empirical and theoretical bases for the health-relevance of mantra repetition (D2), while noting that precise causal processes may vary according to how the mantra is used in daily practice (D4, D5).

Indigenous perspectives. Less elaborated in the main article were indigenous cultural and spiritual perspectives on mantras (D3). These perspectives merit elaboration because over thousands of years, as a cross-culturally widespread practice, mantra repetition has generated much indigenous commentary that may be a source of needed insight or a spur to hypothesis-generation. Attention to indigenous perspectives on mantras also merits attention as part of efforts to globalize, internationalize, and decolonize psychology (Bhatia, 2019; Christopher et al., 2014; Marsella, 1998; Van de Vijver, 2013). In such efforts, scholars are now working across multiple cultural zones and religious traditions to integrate modern with indigenous psychological insights, including with spiritual and religious insights (e.g., Haque et al., 2016; Mayseless et al., 2023; Rao & Paranjpe, 2016; Stevenson et al., 2007). The existence of mantra repetition as a spiritual practice has sometimes been noted briefly in efforts to integrate modern and traditional spiritual insights, but most integrative attention has been directed to other tasks, such as the compatibility of theories and beliefs, and implications for therapy. However, spiritual and religious traditions do offer a range of ideas about mantras, including ideas about processes through which they can produce beneficial effects.

For example, in the Christian tradition, John Cassian (365–435 C.E.) describes many ways that
his mantra (Psalm 70:1) may be “adapted to every condition and... usefully deployed against every temptation” (Cassian & Luibhéid, 1985, p. 133). He suggests that effective coping may be one process that mediates benefits. He sketches numerous specific self-regulatory uses that include applications for “lifting one’s mind and heart out of despair, dryness or fear, for preventing greed, anger, and false pride, for controlling inappropriate desires to eat, sleep, or fail to eat or sleep, for overcoming distractions from memory and a vivid imagination, and for preserving and consolidating strength of purpose” (Oman & Driskill, 2003, p. 7).

Similarly, in the Indian tradition, in a chapter entitled “working of the divine name,” Tulpule (1991, pp. 163-180) cautions that the greatest spiritual figures, the “Saints... but for an exception or two, never cared to go into its theoretical side” (p. 163). He nonetheless pieces together accounts from Jnanadev, Bhartrhari, and numerous other spiritual figures, some from non-Indian traditions. Some of the presented theories resonate with modern psychology – for example, a theory that

Constant remembrance of the Name changes the structure of the Ego... Contemplation on the Name acts doubly, as the tape-recorder does. While recording new impressions, it automatically erases the old ones [and] ... not only identifies us continuously with the Divine, but also creates in us love for God.... The Name is a symbolic fraction of the one for whom it stands, namely, God, and its constant remembrance does recreate the state Divine by the law of Association of Ideas. (pp. 173, 175)

As its research base expands, the field of mantra repetition studies could surely benefit from a systematic cross-cultural survey of spiritual understandings of how various forms of mantra repetition produce psychological, spiritual, and health effects. Such a survey would be challenging, especially because many relevant indigenous commentaries may lack English translations, but multi-faith resources on mantras are already available from scholars and spiritual commentators concerned with multiple traditions (e.g., Baesler, 2001; Coward & Goa, 2004; Easwaran, 2008; Tulpule, 1991).

**Empirical evidence.** Complementing these traditional perspectives is the empirical evidence generated through modern scientific methods (D2). The main article noted several modern psychological theories, such as associative networks, spreading activation, repeated priming, and coping processes, that are relevant to understanding causative effects from mantras. Some empirical evidence was also noted for distinctive added value effects from repeating spiritual phrases versus neutral phrases (e.g., Wachholtz & Pargament, 2008). Empirical evidence is comparatively abundant regarding the overall health effects of various forms of mantra repetition (e.g., Table 1 in main text; Table S1, above). However, direct empirical evidence is more limited for how effects from mantra repetition are mediated.

The largest body of direct empirical evidence on mediation derives from the Mantram Repetition Program (MRP), which teaches portable mantra repetition. Statistical evidence has been reported for mediation of mental health benefits from the MRP by positive reappraisal coping, spiritual well-being, faith/assurance, symptom management self-efficacy, mindfulness, and frequency of mantra repetition (see Bormann et al., 2014, p. 94, overview in Table 5.1; Oman & Bormann, 2015, 2018).

Oddly, studies of psychological factors as potential mediators of outcomes from Transcendental Meditation (TM) are rare or possibly non-existent. Numerous studies of TM have used self-report scales to measure psychological variables such as stress, anxiety, or locus of control, and have analyzed them as *outcomes* (e.g., as reviewed in Eppley et al., 1989; Walton et al., 2004). Also fairly common in TM research are measures of physiological stress correlates, such as cortisol, also analyzed as outcomes (e.g., Koncz et al., 2021; Schneider & Carr, 2014). Rarer, or possibly non-existent, are research reports that use statistical techniques to analyze whether a psychological variable *mediates* an effect from TM on an outcome of interest. Mediating factors are unmentioned, for example, in a recent handbook chapter, and in a recent *review of reviews* of TM research (Orme-Johnson, 2021; Ooi et al., 2017). Rather, much

S9
WHAT IS A MANTRA?

research on TM has employed a largely biomedical, rather than biopsychosocial, model of health (Engel, 1977), emphasizing physiological measures and variables such as electroencephalograms and cortisol, plus a postulated pivotal role for a “fourth major state of consciousness, different from waking, dreaming, and sleeping,” said to be induced by practicing TM (Orme-Johnson, 2021, p. 720). The dearth of attention to measured psychological mediating factors is consistent with a recent history of research on meditation, which reported that TM research has been methodologically “both innovative and limited. TM studies helped expand research designs beyond purely lab-based approaches... [but] the intervention itself was never fully explained... and it [has] remained in significant ways an enigmatic ‘black box,’ impeding study of the psychological processes through which it induced change” (Oman, 2021, p. 47).

Most other mantra-utilizing interventions overviewed in Table 1 (and Table S1) have not benefited from empirical studies of mediation. One exception, however, is Passage Meditation (PM), in which portable mantra repetition is one of eight practices taught in the intervention (Oman & Bormann, 2018). Statistical evidence for mediation of Passage Meditation benefits has been reported for mindfulness, adherence to portable mantra repetition, adherence to other program practices, stress reduction, compassion, and mindfulness (Oman et al., 2010; Oman & Bormann, 2018; Shapiro et al., 2008). At least two separate studies have reported evidence supporting causal mediation specifically by adherence to portable mantra repetition. One, a study of college students (n=14), reported that diary-recorded adherence to mantra repetition predicted greater (above average) reductions in stress both bivariately and after adjusting for changes in mindfulness (p<.05, Shapiro et al., 2008, Tables 2 and 4). The other study, a qualitative interview study of health professionals trained in Passage Meditation (n=24), provided evidence that effects from portable mantra repetition may at times be mediated by engagement in other program practices (Oman et al., 2008). Interview transcripts revealed four recurring causal chains by which participants perceived the practice of repeating a mantra as enabling them to be more efficacious in their work as caregivers. Consistent with portable mantra repetition dynamics described elsewhere (Oman et al., 2022), mantra repetition was sometimes experienced as enabling these health professionals to engage in two of the other PM practices (Slowing Down and Focused Attention; extracted from Oman et al., 2008, Table 3, p. 1128), through the following perceived causal linkage patterns:

- Mantram → Slowing Down → Focused Attention → Efficacy (reported by 7 participants)
- Mantram → Focused Attention → Efficacy (reported by 4)
- Mantram → Focused Attention → Slowing Down → Efficacy (reported by 2)
- Mantram → Efficacy (reported by 2)

In sum, a small body of empirical evidence supports the independent influence of mantras embedded in multi-component interventions, and indicates that psychological effects from mantra repetition may be causally mediated by variables such as positive reappraisal coping, spiritual well-being, faith/assurance, symptom management self-efficacy, other intervention components, and mindfulness. Such findings are consistent with, and sometimes predictable from, well-established psychological processes that are supported by voluminous evidence, and also, as described in the main text, voluminous evidence about mental and physical health effects from spiritual and religious engagement.

**Future directions.** As interest in mantra repetition continues to expand, improved understanding of processes that mediate effects from mantra repetition can inform the design and refinement of maximally beneficial interventions for various populations. Conducting more empirical mediation studies (D2) and understanding indigenous perspectives on mantra repetition (D3) represent two important future directions for improving understanding. Whenever relevant, such research should recognize that different effects could potentially result from repeating a mantra in different ways (e.g., portably, seated, chanting, D4), or in combination and interaction with various other sets of practices (D5), each of which may possess its own evolving research base (e.g., Oman, 2021).
WHAT IS A MANTRA?

References (Supplemental Materials)


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