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Buddhism and Western Psychology

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Buddhism and Western Psychology

Seth Zuihō Segall

Psychology emerged as an independent field of naturalistic inquiry during an era of dawning Western scholarly and popular interest in Buddhism. Over the past century-and-a-half psychologists, psychiatrists, and psychoanalysts have analysed, pathologized, misinterpreted, appreciated, assimilated, adapted, and/or converted to Buddhist ideas and practices. At the same time, psychological approaches to Buddhism have led to 'naturalized' and 'psychologized' forms of contemporary Buddhist practice, especially in 'convert' Buddhist communities. This article explores the relationship between Western psychology and Buddhist texts and teachers from the World Parliament of Religions in 1893 through the dramatic post-1960 expansion of possibilities for Westerners to engage in Buddhist practice, and beyond. It covers Buddhist influences on psychoanalytic, humanistic-existential, transpersonal, cognitive-behavioural, and positive psychologies, as well as on cognitive science and contemplative neuroscience. It examines the current interest in mindfulness-based interventions and the resurgence in psychedelic research. Finally, this article critically examines (1) the cultural and historical reasons for psychology's continuing interest in Buddhism; (2) the problems inherent in adapting Buddhist metaphysical, soteriological, and ethical tenets into an empirical, naturalistic framework; and (3) the value of Buddhism's contributions to Western psychology, and through Western psychology to Western culture writ large.

Keywords: Buddhist practice, Psychology, Cognitive science, Neuroscience, Mind, Mental health, Mindfulness, Meditation, Psychedelic research

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1 The early history of relations between psychology and Buddhism

Psychology's emergence as an independent field of naturalistic inquiry coincided with the onset of a burgeoning Western interest in Buddhism. Sir Edwin Arnold's popular poem about the life of Gautama Buddha, *The Light of Asia* (1879), was published in London the same year Wilhelm Wundt opened the first experimental psychology laboratory at the University of Leipzig. The first English-language edition of Indologist Hermann Oldenberg's *Buddha: His Life, His Doctrine, His Order* was published in 1882; Max Müller's *Sacred Books of the East* series published the first complete English-language translations of important Buddhist texts between 1881–1894; and the Pāli Text Society published the first English-language translations of the Pāli canon in 1881. These works made their appearance in the same historical era William James published *The Principles of Psychology* (1890), and Joseph Breuer and Sigmund Freud published their *Studies on Hysteria* (1895; see Breuer and Freud 1953).

The first stirrings of interest in Buddhism in the anglophone world occurred some 35 years earlier with the publication of Elizabeth Palmer Peabody's English-language translation of an excerpt from *The Lotus Sutra* (based on Eugène Burnouf's French translation) in the American transcendentalist journal *The Dial* (1844). The publication of Sir Edwin Arnold's *The Light of Asia* (1879), which sold between 500,000 and 1,000,000 copies in the United States, counts as perhaps the first full introduction of Buddhism to English-speaking Westerners, who were until then often unclear as to the distinction between Buddhism and Hinduism.

Buddhism gained new visibility in America when the World Parliament of Religions convened in Chicago in 1893. William James' s 1901–1902 Gifford lectures on the varieties of religious experience delivered at Edinburgh University in Scotland were in part stimulated by his familiarity with the philosophy of Anagarika Dharmapala, the Sri Lankan Theravāda Buddhist representative to the World Parliament. Dharmapala, recalling sitting in on one of William James's psychology lectures at Harvard in December of 1902, wrote:

> I tried unobtrusively to reach the back of the lecture-hall to hear the great teacher of psychology, but it is difficult for a man in a yellow robe to be inconspicuous in America. Professor James saw me and motioned for me to come to the front of the hall. He said: 'Take my chair, and I shall sit with my students. You are better equipped to lecture on psychology than I am'. After I had outlined to his advanced class some elements of Buddhist doctrine, he turned to this students and said, 'This is the psychology everybody will be studying twenty-five years from now'. (Dharmapala 1927)

While it's impossible to verify the accuracy of Dharmapala's account, his anecdote illustrates the growing mutual interest between Buddhists and psychologists. Those relationships were stimulated, in part, by claims by Asian Buddhist modernists such as Anagarika Dharmapala, Soyen Shaku, and Daisetsu Taitarō Suzuki that Buddhism was compatible with Western science. Shaku Soyen, the Japanese Rinzai Zen representative to the World Parliament of Religions, introduced Suzuki, his translator, to the German-American Theosophist and Parliament co-organizer, Paul Carus. Carus came to serve as Suzuki's English-language publisher, while Carus' own writings played a significant role in the transmission of Buddhism to the West. Suzuki became the best known interpreter of Zen in the West during the mid-twentieth century and played a key role in introducing Buddhism to the psychoanalytic community. Carl Jung wrote the foreword to the German-language edition of Suzuki's *Introduction to Zen Buddhism* (1939), and Suzuki's 1952–1957 Columbia University seminars were attended by psychoanalysts Erich Fromm and Karen Horney. Those seminars led to a 1957 conference on Zen and psychoanalysis in Cuernavaca, Mexico and the subsequent publication of the influential *Zen Buddhism and Psychoanalysis* (Fromm, Suzuki and de Martino 1960).

2 Reasons for psychology's interest in Buddhism

Dharmapala, Shaku, and Suzuki were all Asian Buddhist modernists (McMahan 2008). Buddhist modernism was a nineteenth-century Asian Buddhist movement that developed in response to Western colonialism, Christian evangelism, and Western scientific and philosophical advances. In separate but parallel developments, modernizers in Sri Lanka, Burma, and Japan developed ways to present Buddhism as a rational way of life compatible with science and modernity. Western Theosophists such as Henry Steel Olcott, Paul Carus, Christmas Humphries, Edward Conze, and Walter Evans-Wentz played a significant role in influencing and supporting these modernizers as well as influencing how Buddhism came to be perceived by Western psychologists. For example, Carl Jung wrote the psychological commentary (1935; see Jung 1958) that prefaced later editions of Evans-Wentz's 1927 translation of the *Tibetan Book of the Dead*. The Asian Buddhist modernist idea of *Buddhist exceptionalism* – that compared to other religions, Buddhism was the religion most compatible with science – contributed to Buddhism's significant impact on Western psychology.

A second reason for psychology's interest in Buddhism is that while mainstream psychology often presents itself as a 'hard science', there has been a persistent 'shadow culture' within psychology that has been intrigued by questions of spirituality, religious experience, and altered states of consciousness (Taylor 1999). The influence of this shadow culture waxes and wanes, at times seeming to almost vanish, and at times re-capturing the popular imagination. Psychologically-minded intellectuals in late nineteenth-century Boston and London were especially open to studying esoteric and occult

phenomena. For example, the membership of the Society for Psychical Research, organized in London in 1882, included psychologists Edmund Gurney and William James, philosopher Henry Sidgwick, and Nobel Prize winning physiologist Charles Richet. The American branch of the Society, founded in Boston in 1885, included psychologist William James, philosopher Charles Peirce, and neurologist Morton Prince. This interest in spiritual and religious experience has persisted throughout psychology's history, at times confined to small groups outside the mainstream, and at times playing more of a central role as it does in the contemporary 'mindfulness movement' and resurgent interest in psychedelics.

A third reason Buddhism attracted psychology's interest is that Buddhist philosophy is concerned with many of the same topics that preoccupy Western psychology, including concerns about nature of self, consciousness, perception, motivation, emotion, mental states, and altered states of consciousness as well as the causes of human unhappiness and the path to attaining optimal wellbeing. Buddhist texts such as the Pāli *Nikāyas*, the various *Abhidharma* texts, and the work of Buddhist philosophers like Vasubandhu, Asaṅga, Diṅnāga, and Dharmakīrti offer rich analyses of mental life that can be sources of new insights for Western psychologists. These include the five *skandhas* (aggregates) depiction of materiality and consciousness; the Buddhist account of the six sense bases, sense realms, and consciousnesses; the relationship between contact, desire, attachment, and suffering as described in the Four Noble Truths and the doctrine of Dependent Origination; the *Abhidharma* analyses of mental factors; and the *Yogācāra* account of the eight consciousnesses.

A fourth reason for psychology's interest in Buddhism is the role of meditation in Buddhism. While meditation is not central to every form of Buddhism, the forms of Buddhism that captured Western psychologists' imaginations heavily emphasize it. The 1960s-1970s saw an influx of Asian Buddhist teachers (e.g. Shunryū Suzuki Roshi, Sheng Yen, Taizan Maezumi Roshi, Dainin Katagiri Roshi, Thich Nhat Hanh, Seung Sahn, S.N. Goenka, Geshe Wangyal, Kalu Rinpoche, Tartang Tulku, and Chögyam Trungpa Rinpoche) who taught meditation-centered forms of Buddhism to European-descent Western students. That era also witnessed the return of Western European-descent travelers who studied meditation-centered forms of Buddhism in Asia (e.g. Ajahn Amaro, Thanissaro Bhikkhu, Sangharakshita, Bhikkhu Bodhi, Robert Aitkin Roshi, Stephen Batchelor, Christopher Titmuss, Philip Kapleau Roshi, Robert Kennedy Roshi, Joseph Goldstein, Jack Kornfeld, Ruth Denison, and Sharon Salzberg). Their arrival coincided with a popular interest in non-Buddhist forms of meditation being taught by Asian teachers such as Jeddu Krishnamurti and Maharishi Mahesh Yogi.

Fifth, the Dalai Lama's emergence as a Nobel Prize winning symbol of peace and compassion helped cement Western interest in Buddhism. The Dalai Lama's lifelong

interest in Western science and his foundational role in developing the Mind and Life Institute (1991) with its annual conferences and retreats spurred interest in contemplative science and helped inspire a generation of meditation researchers who were also meditation practitioners. The founders of the Mind and Life Institute included the Dalai Lama, biologist-philosopher Francisco Varela, Zen teacher Joan Halifax Roshi, psychologist-journalist Daniel Goleman, psychologist Richard Davidson, and Jon Kabat-Zinn. Davidson went on to found the influential Laboratory for Affective Neuroscience at the University of Wisconsin-Madison as well as the Center for Healthy Minds and became a major figure in the field of contemplative neuroscience. Together with Daniel Goleman, Davidson has been a key proponent of the idea that prosocial emotions such as compassion are cultivatable skills. Varela introduced the concept of embodied, enactive cognition which has been influential in cognitive psychology. Kabat Zinn developed Mindfulness-Based Stress Reduction (MBSR), founded the Center for Mindfulness, Medicine, and Healthcare at the University of Massachusetts-Worcester School of Medicine, and is the person most responsible for the current Western interest in mindfulness.

For all of these five reasons, Buddhism has had a sustained impact on psychology, working its way, both subtly and overtly, into contemporary psychoanalysis, cognitive-behavioural psychology, humanistic psychology, transpersonal psychology, positive psychology, cognitive neuroscience, and neuropsychology. This encyclopaedia article examines Buddhist influences on the broad stream of psychological science and practice.

3 Buddhism and psychoanalysis

Despite Sigmund Freud's aversion to religion, psychoanalysts like Carl Gustav Jung and Erich Fromm played major roles in introducing Buddhist ideas to Western psychology and Western culture more broadly. While psychoanalysis's initial orientation was reductionistic, finding infantile and unconscious causes for Buddhist beliefs, later psychoanalysts increasingly saw the possibility of therapeutic potential in Buddhist doctrines and practices paving the way for the modern integration of Buddhist practice and psychotherapy.

3.1 Sigmund Freud's view of religion

Psychoanalysis founder Sigmund Freud thought religion was a wish-fulfilling illusion whose psychic origins lay in the experience of early man's helplessness in the face of the power of nature and the imperfections of society (Freud 1961). In *Totem and Taboo* (1919) and *Moses and Monotheism* (1939), Freud sought the origins of religious beliefs in the vicissitudes of prehistory, childhood psychosexual development, and the defense mechanisms of the ego (see Freud 1919; 1939). Religion, as such, was something to be explained away rather than practised, and Freud looked forward to a future when religious beliefs and practices might be replaced by rational, empirical inquiry. Freud disagreed with

Carl Jung's view of spirituality as an authentic expression of the collective unconscious, and worried Jung's views would undermine psychoanalysis's credibility within the scientific community. Freud never specifically addressed Buddhist beliefs, but his anti-religious stance discouraged many fellow psychoanalysts from exploring Buddhism (or religion) as a valid phenomenon.

3.2 Franz Alexander

Hungarian-born psychiatrist Franz Alexander was the first psychoanalyst to specifically address Buddhism. Alexander trained at the Berlin Psychoanalytic Institute and became a visiting professor at the University of Chicago and an analyst for the Chicago Psychoanalytic Institute. He interpreted Nirvāṇa as a regression to the mother's womb and a rechanneling of libido away from the world and towards the self (Alexander 1931). He also interpreted the four meditative absorptions (*jhanas*) as successive stages of 'sadistic, self-induced melancholia, then narcissism, then a diminution of the feelings of pleasure (which are gradually replaced by apathy), and finally a stage of complete mental emptiness and uniformity'. Alexander's approach was consistent with Freud's explaining away of religion by reducing it to its presumed intrapsychic origins and meaning.

3.3 Carl Gustav Jung

Swiss psychiatrist Carl Gustav Jung took a more positive view of Buddhism, reinterpreting it in terms of his own theory of intrapsychic development. In his foreword to Suzuki's *Introduction to Zen Buddhism* (1939; see Jung 1964), Jung portrayed Zen as an Eastern method for attaining psychological wholeness. In his commentary on the *Tibetan Book of the Dead*, he asserted 'metaphysical assertions are […] *statements of the psyche* and are therefore psychological' (Jung 1958: 511). For Jung, the *bardo* visions of the *Tibetan Book of the Dead* were archetypal expressions of the collective unconscious and Tibetan mandalas (Jung 1972) were archetypal symbols of the wholeness and integration that characterize the end-stage of the individuation process. Jung considered Buddhism a rich source of lore about the nature of the psyche and individuation that could be used to confirm his view of therapy as a path towards integration and wholeness.

3.4 Erich Fromm

Erich Fromm was a Neo-Freudian analyst who, along with Karen Horney and Harry Stack Sullivan, emphasized the existential and socio-cultural aspects of psychoanalysis. Fromm, who studied with D. T. Suzuki, considered psychoanalysis and Zen as similarly aimed at liberating human potential (Fromm, Suzuki and de Martino 1960). He saw Zen and vipassana meditation as powerful tools for facilitating actualization, and as such, useful adjuncts to psychotherapy. He viewed Zen and psychoanalysis as both addressing the malaise of modern man's alienation from himself, his fellow man, and nature. Zen and

‘humanistic psychoanalysis’ helped people to become more open, responsive, sensitive, and awake. Fromm was an important bridge between earlier forms of psychoanalysis and the subsequent development of existential, humanistic, transpersonal, and positive psychologies with their emphases on wellbeing, fullness, wholeness, and relatedness. Many of his interpretations have become staples of the Western Buddhist modernist canon.

3.5 Buddhist practitioner-psychoanalysts

Buddhist scholar Charles Prebish (1979) coined the phrase ‘two Buddhisms’ to describe two distinct lines of development in Western Buddhism: the Buddhism of Asian immigrant communities and the Buddhism of European-descent “convert” communities. While Prebish (1993) came to regret that classification as overly simplistic, it correctly identified the vast expansion of possibilities for Buddhist practice that became available to non-Asian Westerners in the years following 1960. That expansion of possibilities for Buddhist practice in ‘convert’ Zen, Vipassana, and Tibetan Buddhist communities led to a generation of psychoanalysts who were not only interested in Buddhism but were also serious Buddhist practitioners including Barry Magid, Jeremy Safran, Mark Epstein, Joseph Bobrow, Jack Engler, Jeffery Rubin, and Jungian analyst Polly Young-Eisendrath. While there are differences in their approaches to integrating Buddhism and psychoanalysis, they all interpret Buddhism in ways that ‘naturalize’ it, downplaying aspects of Buddhism that are inconsistent with modern science (or interpreting them metaphorically) and viewing the goal of Buddhist practice as enhanced human flourishing within a single lifetime. Their naturalistic interpretations have gained currency within many ‘convert’ Buddhist communities, resulting in an increasing ‘psychologization’ of Western Buddhism, interpreting the goals of practice in psychological rather than soteriological terms (McMahan 2008; Gleig 2019). Through this process of psychologization, the Buddhist realms of rebirth come to be understood as metaphors for psychological states (e.g. Epstein 2013) and celestial bodhisattvas as metaphors for human potentials (e.g. Macy 2001). As a result of this process, Dharma talks in many Western Buddhist ‘convert’ communities emphasize psychological aspects of Buddhism (e.g. wholehearted presence, attention to embodied experiencing, working skillfully with thoughts, desires, and emotions, cultivating compassion) and underemphasize or omit other aspects (e.g. merit, devotional practices, and mantras). Critics see this as a watering down, distortion, or colonization of Buddhism (Cohen 2022), while proponents of naturalization see it as an inevitable, necessary, and even desirable aspect of Buddhism’s transmission to the West (Segall 2020).

Husgafvel and Utriainen (2023) invoke the concept of *transreligiosity* to capture the variety of ways mental health professionals integrate their secular professional training with training received in Buddhist contexts. They define transreligiosity as ‘the entanglement

and porosity of both religious and secular traditions, worldviews, knowledge, practices, and sentiments' (Husgafvel and Husgafvel and Utriainen 2023: 3). Helderman (2019) similarly identifies the ways Buddhist practitioner-psychologists often re-draw the socially-constructed boundaries between what is considered religious, secular, spiritual, medical, or psychotherapeutic in ways that are inherently unstable and subject to continued critique and revision.

4 Psychologists, psychiatrists, and social workers who became authorized Buddhist teachers

In addition to Buddhist practitioner-psychoanalysts, there are growing numbers of psychoanalysts, psychiatrists, psychologists, and clinical social workers who have become authorized teachers within various Buddhist lineages. Psychologists Jack Kornfield, Larry Rosenberg, Trudy Goodman, and Tara Brach have been major presences in the Insight Meditation community; Psychiatrists Barry Magid and Joseph Bobrow, and psychologists Alan Kaszniak, Marsha Linehan, and Myoan Grace Schireson became authorized Zen lineage holders; Psychologist Daniel P. Brown and Buddhist scholar-social worker Harvey Aronson were authorized as Tibetan Vajrayāna teachers. Their presence within the Buddhist community helped legitimize Buddhist practice as something mental health practitioners might meaningfully engage in and incorporate into their professional identities and has played a role in the ongoing psychologization of Western Buddhist Modernism.

5 Buddhism and humanistic, existential, and transpersonal psychology

Humanistic psychology emerged as a mid-twentieth century alternative to psychoanalytic and behavioural approaches. Initiated by psychologists Abraham Maslow, Carl Rogers, Rollo May, James Bugental, and Anthony Sutich, the movement emphasized relationship, present-moment experiencing, embodiment, authenticity, meaning-making, human potential, and self-actualization. This focus owed a lot, not only to the innovations of American psychologists like Maslow and Rogers, but to existential-phenomenological approaches to philosophy and psychology that developed on the European continent. Existential and humanistic psychotherapies emphasize attending to client's words and actions in the here-and-now within the unfolding therapist-client relationship and the therapist's wholehearted presence in that relationship. Buddhist meditation is believed to enhance attention, presence, and wholeheartedness, and many humanistic-existential Buddhist therapists have commented on how meditative practice has transformed the way they listen to and interact with clients.

Maslow and Sutich later came to believe that humanistic psychology failed to adequately address the spiritual side of human development and founded the field of 'transpersonal

psychology'. Inspired by the writings of William James, Carl Jung, Aldous Huxley, and Alan Watts, this new field focused on investigating meditation, altered states of consciousness, mystical experiences, and spiritual growth. As such, it was interested in how Buddhism might contribute to an empirical psychology of spiritual development. The movement attracted psychologists Charles Tart, John Welwood, and Ram Dass, psychiatrist Stanislav Grof, and transpersonal theorist Ken Wilber.

Humanistic and transpersonal psychology publications (*American Humanistic Psychology Newsletter*, *Journal of Humanistic Psychology*, *Journal of Transpersonal Psychology*, *The Humanistic Psychologist*) reveal the continuing influence of Buddhism on the field. Buddhist teachers Robert Aitken Roshi, Shinzen Young, Jack Kornfeld, Sylvia Boorstein, and Joanna Macy contributed articles to these publications, as did Buddhist practitioner-psychologists Jack Engler, Daniel Brown, Mark Epstein, John Welwood, Seth Segall, Belinda Khong, and Joseph Bobrow, and Buddhist scholars Rita Gross and David Loy. Their articles include explorations of the connections between Buddhism and existential-phenomenological philosophy, the role of mindfulness in personal and spiritual development, the implications of the Buddhist doctrine of *anattā* (non-self) for understanding selfhood, the role Buddhism might play in social transformation, and the relationship between psychedelics and Buddhism. The *Journal of Transpersonal Psychology* also featured the earliest explorations of the therapeutic potential of Buddhist meditation in articles by Roger Walsh, Daniel Goleman, Stanley Krippner, Michael Murphy, Seymour Boorstein, Sylvia Boorstein, Mark Epstein, Gary Deatherage, Bruce Scotton, and Shauna Shapiro. These articles paved the way for a subsequent explosion of interest in therapeutic meditative interventions, starting with Herbert Benson's (1975) relaxation response and Jon Kabat-Zinn's (1982) Mindfulness-Based Stress Reduction (MBSR).

6 Buddhism and positive psychology

The twentieth-first century positive psychology movement, whose founders include psychologists Martin Seligman, Mihaly Csikszentmihalyi, Christopher Peterson, and Ed Diener focuses on investigating the determinants of happiness, wellbeing, and human flourishing. Although Buddhism and positive psychology are both concerned with human flourishing, they have partially divergent conceptions of what flourishing entails. From its inception, positive psychology has drawn on a conception of human flourishing that includes elements of subjective wellbeing, virtue, and meaning. Peterson and Seligman (2004) developed a neo-Aristotelian classification of character strengths and virtues they imagined might instrumentally promote and partially constitute human flourishing. Seligman's (2011) later PERMA model proposed an objective list of factors purported to be the core constituents of human flourishing: Positive emotion, Engagement, Relationships, Meaning, and Accomplishments.

The Buddhist idea of enlightenment – a state of subjective wellbeing marked by inner peace, non-harming, non-hatred, non-greed, non-attachment to false views of self, and the virtues of generosity, sympathetic joy, equanimity, loving-kindness, and compassion – has elements in common with positive psychology's conception of flourishing. Yet Buddhist enlightenment also includes metaphysical, transcendent, and supernatural elements that fit poorly with a naturalistic psychology. These include the ideas of Nirvāṇa as a stepping off the wheel of rebirth, of Nirvāṇa being an unconditioned state that is not the result of any cause, and of Nirvāṇa-without-remainder as entailing an unembodied post-death existence. Contemporary authors have proposed naturalized models of enlightenment that bring it more in line with positive psychology, viewing enlightenment as a set of positive mental states and virtues that jointly constitute flourishing within a single lifetime (Batchelor 1997; Flanagan 2011; Segall 2020). In these naturalized models, transcendent states of awareness contribute to meaning, wellbeing, and moral development without necessarily revealing metaphysical and ontological truths. While this conception of enlightenment is compatible with positive psychology, it is probably not the view of most Buddhists in the world today, and critics worry that naturalizing enlightenment limits the kinds of transcendence that may be possible for practitioners.

Despite these differences in vision, Buddhist ideas have had a major impact on positive psychology, especially the ideas that: (a) equanimity, mindfulness, loving-kindness, and compassion are cultivatable qualities that enhance wellbeing; (b) attachment and aversion are causes of surplus suffering that can be ameliorated through an attitude of radical acceptance; (c) the 'self' should be viewed as fluid and relational, rather than fixed and independent, and (d) self-transcendent spiritual experiences can enhance meaning and growth (Segall and Kristeller 2023). This has led to positive psychology interventions that include aspects of mindfulness training such as Mindfulness-Based Strengths Practice (Niemiec and Lissing 2016) and Mindfulness-Based Flourishing (Ivtzan, Niemiec and Briscoe 2016).

7 Buddhism and cognitive-behavioural psychology

7.1 The introduction of mindfulness to the West

Pāli Text Society translator T. W. Rhys Davids was the first to translate the Pāli word sati as 'mindfulness' in 1881. Contemporary Western interest in mindfulness owes a debt to German-born Theravāda monk Nyanaponika Thera (1962), Vietnamese Zen monk Thich Nhat Hanh (1975), and American-born Insight Meditation teachers Joseph Goldstein and Jack Kornfeld (1987), but it is Jon Kabat-Zinn, an M.I.T. graduate in molecular biology, who has been most responsible for making mindfulness a household word in the West. Kabat-Zinn established a Stress Reduction and Relaxation outpatient program for the treatment of chronic pain at the University of Massachusetts Medical Center-Worcester in 1971 and

published an outcome study of that program in 1982. That program was the foundation for what became known as Mindfulness-Based Stress Reduction (MBSR). MBSR teaches mindfulness through a variety of formal (body scanning, breath-focused sitting meditation, open-monitoring sitting meditation, walking meditation, loving-kindness meditation, and mindful yoga) and informal meditation techniques. The program is intensive – in addition to eight two-and-one-half hour weekly group training sessions and a half-day retreat, participants are expected to engage in 45 minutes of daily meditative home practice. Kabat-Zinn defined mindfulness as purposefully paying attention to whatever was occurring in the moment without judgment. Meditative experiences were to be approached with interest, openness, curiosity, acceptance, and an attitude of 'letting be'.

7.2 Is Kabat-Zinn's mindfulness Buddhist mindfulness?

In Buddhism, right mindfulness (*samma sati*) is the seventh aspect of the Eightfold Noble Path. There has been some debate about whether Kabat-Zinn's definition of mindfulness as non-judgmental attention to momentary experience is completely concordant with traditional Buddhist understandings of mindfulness. Bhikkhu Bodhi points out that the Theravāda tradition couples *sati* (mindfulness) with *sampajañña* (clear comprehension) (Bodhi 2013). Mindfulness is the lucid perception of mental phenomena, while clear comprehension the understanding of phenomena within the context of the Buddhist teachings for ending suffering. For example, if one perceives a desire, mindfulness means being aware the desire has arisen, while clear comprehension means understanding how fulfilling or not fulfilling the desire increases or decreases suffering. Bodhi concludes that 'right mindfulness' cannot be understood in isolation but must be connected to 'a web of factors that give it direction and purpose' (2013: 31). This means it must involve more than bare attention to phenomena. On the other hand, there are non-dual Buddhist meditative traditions (e.g. Zen, and the later stages of Mahāmudrā and Dzogchen practice) that advocate a mindfulness that eschews cognitive elaboration (Dunne 2013). Husgafvel (2018) describes how Kabat-Zinn's familiarity with Zen and Dzogchen informs his understanding of a 'universal dharma'. Buddhism is not a single tradition that speaks with a unified voice, but a broad family of historically and philosophically related traditions. Kabat-Zinn's definition may be more concordant with the Chinese and Tibetan non-dual traditions than with the Southeast Asian Theravāda tradition.

7.3 Mindfulness research and second-generation of mindfulness interventions

Kabat-Zinn's 1982 study was a proof-of-concept pilot study that lacked randomization and controls. It was quickly followed by replication studies that made use of randomization, controls, and more sophisticated measurement methods, as well as studies that extended the kinds of problems mindfulness might address. Could it reduce stress, depression and

anxiety? Could it be a useful adjunct in the treatment of eating disorders and substance abuse? Could it ameliorate the causes and consequences of stress-related or stress-causing medical conditions? Could it enhance wellbeing or promote prosocial behaviour in a healthy population? These unanswered questions led to an explosion of research interest in mindfulness-based interventions. Second-generation variants of MBSR quickly evolved including Mindfulness-Based Cognitive Therapy (Segal, Teasdale and Williams 2002), Mindfulness-Based Relapse Prevention (Vallejo and Amaro 2009), Mindfulness-Based Eating Awareness Training (Kristeller and Wolever 2010), Mindfulness-Based Mental Fitness Training (Stanley et al. 2011), and Mindfulness-Based Cancer Recovery (Speca et al. 2014). Studies were also undertaken to discover the correlates of mindfulness as a personality trait as well as to understand its biological correlates. According to the American Mindfulness Research Association, 10,664 peer reviewed mindfulness articles were published in scientific journals between 1982–2022, the great majority of them (10,153) between 2010–2022 (Black 2023). The research on mindfulness-based interventions is so extensive that Goldberg et al. (2021) were able to review the results from forty-four meta-analyses representing 336 randomized controlled trials involving 30,483 intervention participants.

A decade after MBSR first made its appearance, psychologist Marsha Linehan introduced Dialectical Behavioural Therapy (DBT), a cognitive-behavioural treatment for chronic suicidality, para-suicidality, and borderline personality disorder (Linehan 1993). Linehan studied Zen with Willigis Jaeger Roshi beginning in the 1980s and was granted Dharma transmission in 2012. Linehan used her familiarity with Zen to craft a set of mindfulness exercises that constituted one of the four skills modules (mindfulness, distress tolerance, emotional regulation, and interpersonal effectiveness) that comprise DBT group training. Unlike MBSR, DBT does not require participants to meditate for long periods of time. Linehan believes many borderline patients are unable to tolerate long periods of silent inactivity which they are bound to fill up with their own negative thought processes. Instead, Linehan uses mindfulness to interrupt negative and distorted thought patterns by briefly grounding oneself in immediate sensory experience and returning to a state Linehan calls ‘wise mind’.

Later in that same decade, psychologists Steven Hayes, Kirk Strosahl, and Kelly Wilson (2003) introduced a cognitive-behavioural approach called Acceptance and Commitment Therapy (ACT). While not derived from Buddhism, one of ACT’s strategies is to ‘decontextualize’ thoughts and emotions rather than take them at face value. Hayes has noted the similarity between ACT decontextualization and Buddhist mindfulness as forms of meta-cognition. ACT’s emphasis on acceptance also parallels the Buddhist letting go of desires and preferences and accepting the changing nature of phenomena.

Three years later, Segal, Teasdale, and Williams (2002) introduced Mindfulness-Based Cognitive Therapy (MBCT) for the treatment of recurrent depression. Using an MBSR-based format, MBCT integrated mindfulness meditation training with cognitive-behavioural approaches to modifying overgeneralizations and cognitive distortions that contribute to depression. MBCT was followed by a plethora of other mindfulness-based interventions using a modified MBSR-based format to treat a broad variety of emotional, behavioural, and medical problems. This rapid emergence of sets of cognitive-behavioural strategies integrated with Buddhist-derived or Buddhist-parallel mindfulness approaches contributed to what Hayes (2004) calls the 'third wave' of cognitive-behavioural interventions.

Despite voluminous research on mindfulness-based interventions, many unanswered questions remain. First, while the research shows that (1) mindfulness-based approaches can significantly alleviate perceived stress, anxiety, depression, and other garden-variety symptoms of ill-being compared to no treatment or inactive control groups, and (2) their results are often roughly equivalent to pre-existing cognitive-behavioural, humanistic-existential, psychoanalytic, and pharmacologic treatments, (3) it remains unclear whether and in what ways mindfulness-based interventions may be meaningfully superior to other evidence-based treatments in clinical populations.

Second, research shows that not every participant benefits equally from mindfulness-based interventions. Britton et al. (2021) catalogued the ways in which a minority of meditators experience persistent deleterious side-effects from meditation practice. There is no definitive research on (1) what populations may be most vulnerable to these side-effects, (2) what teaching and practice strategies best minimize their occurrence, and (3) how they can best be alleviated once they occur. Other studies show some subsets of clinical populations benefit more than others. For example, patients with three or more depressive episodes benefit more from MBCT than those with fewer episodes (2000), and patients with childhood abuse histories benefit more from MBCT than those without (Kuyken et al. 2015).

Third, there are no definitive answers to: (1) which teaching formats (group, individual, online) are most effective, (2) whether it is better to focus on a single type of meditation (e.g. focused-attention, open-monitoring, body scan, mindful yoga, loving-kindness) or teach multiple types to attain specific outcomes, (3) how much meditative practice is necessary before certain types of benefits manifest, (4) whether the benefits of meditation require continued practice to persist over time, (5) the degree to which meditation may be taught as a stand-alone technique as opposed to being taught within a larger ethical and philosophical context to attain desired results, and 5) the amount of training and experience meditation teachers need to be effective.

Fourth, secularized mindfulness-based interventions are not without their critics. Gleig (2019: 53–72) summarizes much of the backlash against the 'mindfulness movement' from traditional Buddhists and from political progressives who worry mindfulness-based interventions devolve into 'McMindfulness' (Purser 2019). Political progressives are concerned that mindfulness interventions are often co-opted by corporations, the military, and the educational and criminal justice systems to pacify employees and clients in order to continue pursuing agendas that are harmful to employees' and clients' genuine interests. These critics also believe that because many of the root causes of personal discontent are primarily societal rather than intrapsychic, people would be better off engaging in collective action to ameliorate political, economic, and social injustice rather than seeking individual means of amelioration. Khong (2021) recently summarized more traditional Buddhist concerns over severing mindfulness from its Buddhist context. She contends that as mindfulness is one of seven co-equal aspects of the Buddhist Noble Eightfold Path, teaching it outside that context may rob it of its true transformative power.

7.4 Compassion, self-compassion, and loving-kindness interventions

The *brahmavihārās* ('divine abodes') are a set of four Buddhist virtues – loving-kindness, compassion, equanimity, and sympathetic joy – that facilitate progress towards wellbeing, an auspicious rebirth, and eventual enlightenment. Buddhists believe these virtues are cultivatable qualities that can be enhanced through meditation and through their enactment in real-life contexts. In Theravāda loving-kindness (*mettā*) meditation, the meditator directs wishes for wellbeing towards oneself, a benefactor, a neutral person, a difficult person, and all sentient beings in turn (Salzberg 1995). Loving-kindness meditation is incorporated into MBSR and many mindfulness-based cognitive-behavioural interventions. Tibetan *tonglen* meditation is a similar practice involving imagining taking on the suffering of others and exchanging it for compassion and loving-kindness. The goal of *tonglen* practice is to cultivate *bodhicitta*, or the motivation to live one's life for the benefit of all beings. The Buddhist understanding of compassion and loving-kindness as cultivatable skills (rather than transient emotions) has had a significant impact on research in affective neuroscience and the development of psychological interventions to enhance wellbeing (Davidson and Harrington 2002). A meta-analysis of twenty-four loving-kindness meditation studies found medium-sized effects for increases in daily positive emotions (Zeng et al. 2015). Studies have also found associations between loving-kindness practice and self-compassion, perceived social integration, decreased self-criticism, and altruistic behaviour (Fredrickson et al. 2019; Leiberg, Klimecki and Singer 2011; Shahar et al. 2015). There are also suggestions that loving-kindness meditation may help preserve chromosomal telomere length and thus guard against the effects of stress and aging (Hoge et al. 2013; Le Nguyen et al. 2019).

Most of the current research on compassion in contemporary psychology stems from Kristin Neff's pioneering research on self-compassion which is deeply rooted in Buddhist psychology (Neff 2003). Neff's self-compassion has three facets: self-kindness, common humanity, and mindfulness. Self-kindness is the capacity to look at one's failings and suffering with compassion. Common humanity is the recognition that one's failings and sufferings are common to all humankind. Mindfulness, in this instance, is the ability to observe one's failings and sufferings intimately without suppression, minimization, or exaggeration. Neff differentiates self-compassion from self-esteem: self-esteem is associated with narcissism, inflated self-views, and the need to perceive oneself as superior, while self-compassion is associated with greater happiness and optimism (Neff 2003). Neff (2014) and Germer and Neff (2019) summarized the research on self-compassion and well-being showing that higher levels of self-compassion were associated with higher levels of happiness, optimism, and life and relationship satisfaction. People with higher levels of self-compassion were also more emotionally connected, accepting, willing to compromise, and concerned for others. Neff and Germer (2013) developed a Mindful Self-Compassion program that includes mindfulness, loving-kindness, and compassion meditations and emphasizes compassionate listening, meeting difficult emotions, exploring challenging relationships, and embracing life with savouring, gratitude, and self-appreciation. A meta-analysis of twenty-seven randomized controlled trials of self-compassion interventions found they enhance self-compassion and mindfulness and decrease rumination, self-criticism, disordered eating, stress, depression, and anxiety (Ferrari et al. 2019).

8 Buddhism and neuropsychology, meditation, and contemplative neuroscience

In his opening chapter of *The Varieties of Religious Experience*, entitled 'Religion and Neurology' William James asserted that religious experience is grounded in neurological processes in the same way all experience is, and that this grounding does not diminish or negate its spiritual meaning or value (James 1936). James's comments opened the door for what Francisco Varela called *neurophenomenology*, or the correlation of brain states with reports of first-person experience (Varela 1996). For psychologists interested in states of consciousness, the emergence of new and nonintrusive technologies for measuring brain structure and function such as electroencephalography (EEG), Computerized Tomography (CT), Positron Emission Tomography (PET), structural and functional Magnetic Resonance Imaging (MRI), and Diffusion Tensor Imaging (DTI) offered exciting opportunities for discovering such correlations. For psychologists interested in Buddhist meditation, they offered a means of demonstrating the possible distinctiveness of what was initially hypothesized as 'the meditative state' and of making the study of meditation seem more like a 'hard' science by anchoring it in objective physical measures.

The initial hope that there might be a single entity called the ‘meditative state’ that correlates with a specific brain state seems, in retrospect, naïve, as it became increasingly clear that there were: (1) different types of meditative practices, (2) a variety of different meditative experiences that might occur within each type of practice, (3) varying depths of meditative immersion and focus that might occur during any meditative session, (4) differences between what novices and experienced meditators might be doing and experiencing while engaging in what is ostensibly the same practice, and (5) differences in what meditators practicing in different cultural contexts might be doing and experiencing while engaging in ostensibly the same practice. As these issues became clearer, researchers began developing greater degrees of theoretical and methodological sophistication and employing more sophisticated experimental designs.

All of these hopes rest on the assumption that specific meditative experiences have one-to-one correspondences with specific brain states. As McMahan points out, however, similar meditative practices have different meanings and attain different results depending on the intentions and expectations of the meditator and the possibilities constrained by the social imaginary of the meditator’s cultural milieu (McMahan 2023). Additionally, during any given meditation session, the brain of the meditator is in a unique state prior to the start of meditation, and the physical, psychological, and social influences impinging on the meditator are also unique to that moment. As such, it seems unlikely that the current brain state of a particular meditator would be identical to its state while meditating at other times, or identical to the brain states of other meditators. The best neuropsychological research can accomplish is to find average similarities across times, methods, and subjects. With these cautions in mind, let us explore what the research has found so far.

8.1 EEG studies of meditation

Researchers began using electroencephalograms (EEGs) to study meditative states in the 1960s. EEG rhythms are categorized according to their oscillatory rate into delta (0–4 Hz), theta (4–8 Hz), alpha (8–14 Hz), beta 14–35 Hz), and gamma (35–45 Hz) bands (note: different researchers use different cut-offs to discriminate the bands). EEG records can be analysed for the percentage of time within each rhythm, the electrical amplitude (power) of each rhythm, and the coherence of rhythms and power asymmetries across electrode placements. This encyclopaedia article cannot summarize the complex findings of seventy years of EEG meditation research in any depth. Different studies utilized different technologies, different mathematical analytic tools, different types of meditation, subjects with differing degrees of meditative experience, and different experimental paradigms, so that one should not be surprised by a diversity of findings. Lomas et al. (2015) reviewed fifty-six EEG studies of mindfulness, Zen, or vipassana meditation completed between 1966 and 2015, and Deolindo et al. (2020) reviewed 187 EEG studies. The results often show average meditation-related increases in alpha and theta amplitude

compared to an eyes-closed resting state. However, Amihai and Kozhevnikov (2014) have challenged even this generalization, suggesting some types of meditation increase alpha amplitude while others decrease it depending on whether they foster relaxation or arousal. In addition, Laukkonen et al. (2023), in a single subject study, found Theravāda *nirodha samāpatti* ('cessation of attainment') meditation resulted in a temporary decrease of alpha synchronization. Alpha may not be a specific marker for meditation, but more a marker for an alert, relaxed state. Findings of average increased meditation-related alpha and theta amplitude led some to speculate that EEG neurofeedback might become an effective means of teaching meditation (Brandmeyer and Delorme 2013). However, given the diversity of research findings, the idea of a distinct EEG pattern corresponding to a unitary 'meditative state' seems premature at best.

In addition to meditation-related changes in alpha and theta amplitude, there are studies suggesting meditation can increase EEG frontal asymmetry, with average left frontal alpha amplitudes becoming greater than average right frontal alpha amplitudes. Davidson et al. (2003) showed MBSR training induced a greater leftward frontal asymmetry compared to a wait-list control. They reasoned that because left prefrontal activity tends to be associated with positive mood and approach behaviours and right prefrontal activity tends to be associated with negative mood and withdrawal behaviour, that mindfulness meditation can increase positive affectivity. One research subject – French-born Tibetan monk Matthieu Ricard – had the greatest degree of leftward prefrontal asymmetry of any subjects tested in Davidson's laboratory, earning him the nickname of the 'happiest man alive' in press accounts. Philosopher Owen Flanagan used Ricard's 'happiest man alive' narrative as a cautionary tale that exemplifies the difficulties of generalizing from neurological findings to statements about wellbeing (Flanagan 2011).

8.2 Studies of meditation-related structural brain structural neuroplasticity

A number of studies have looked at whether meditation is associated with changes in brain structure. The first such study (Lazar et al. 2005) compared the MRI-measured cortical thickness of long-term insight meditation practitioners with that of meditation-naïve subjects. The study found increased cortical thickness compared to meditation-naïve controls in the long-term meditators' right anterior insula and right middle and superior frontal sulci, as well as an age-correlated thickness decrease in non-meditators in a subregion of the right frontal cortex that was not found for the experienced meditators. The authors speculated that long-term meditation practice was associated with increased thickness in a subset of cortical regions that could plausibly be attributed to meditation, and that meditation might slow normal age-related cortical thinning.

Subsequent studies have continued to show structural brain differences between long-term meditators and non-meditators. A meta-analysis of ten MRI studies of meditation-related brain structural changes concluded meditation practice was associated with increased grey matter volume in the frontal lobe, the right anterior cingulate cortex, and left middle and medial frontal gyrus, left precuneus and fusiform gyrus, and right thalamus (Boccia, Piccardi and Guariglia 2015). Luders and Kurth (2019) summarized the complex findings of twelve cross-sectional studies comparing brain structure in long-term meditators compared to non-meditators. Their review covered not only MRI studies of cortical thickness and grey matter density, but also diffusion tensor imaging (DTI) studies that provide measures of white matter integrity. They concluded that, with some exceptions, long-term meditators generally present with larger anatomical measures of structures that are part of large-scale brain networks in the cortex, subcortical grey matter, and white matter.

Cross-sectional studies comparing meditators to non-meditators at a single time point are unable to differentiate meditation-induced brain differences from brain differences due to other factors. Long-term meditators may differ from non-meditators in a variety of ways, including differences in pre-meditation personality traits as well as educational, dietary, and exercise histories. Differentiating meditation from personality and lifestyle effects requires randomized, controlled experimental studies that could take decades to conduct. As a consequence, researchers became interested in whether short-term meditation interventions might also be associated with measurable brain structural change. The first study investigating possible short-term meditation-induced structural brain change (Hözel et al. 2011) compared pre- and post-MBSR measures of brain grey matter density in brain regions with that of wait-list controls. The results, based on voxel-based morphometry, showed MBSR participants had larger increases in grey matter density in the left hippocampus, posterior cingulate cortex, temporo-parietal junction, and cerebellum than controls. These findings were widely touted in the popular press in the years that followed. A more recent study suggests the Hölzel et al. (2011) results cannot be replicated (Krall et al. 2022). Measurable meditation-related structural brain changes probably take longer than eight weeks to emerge.

The idea that meditation can induce brain structural change should not be surprising. Most intensive forms of expert skill training and practice – learning a foreign language, or to play the piano or handball – probably also alter brain structure in measurable ways. The question is, how significant are these brain changes to things that matter to people beyond gaining expertise in a specific skill? Does having a thicker cortex in particular brain regions make people happier, enable them to better regulate their emotions, make them more stress-resilient, improve their executive-attentional functioning, or slow their normal age-related cognitive decline? These are things some meditation advocates allege, but the

connections between these improvements and specific changes in brain structure await further clarification. It is one thing to note, for example, that the insula becomes larger, and another to assert this indicates improved interoception. Similarly, it is one thing to assert the amygdala becomes smaller, and another to assert this is why meditators are less anxious. While these assertions are plausible, brain regions have multiple functions and participate in multiple functional networks, and drawing one-to-one relationships between alterations in their structure and function and specific alterations in mental and behavioural life are difficult to prove.

8.3 Studies of meditation-related changes in functional connectivity

Functional magnetic resonance imaging (fMRI) studies of meditation rely on measuring changes in Blood-Oxygen-Level-Dependent (BOLD) signals. BOLD signals reflect deoxyhemoglobin levels in brain regions. Changes in deoxyhemoglobin levels reflect changes in blood flow and oxygenation. To the extent that blood flow changes are directly proportional to changes in neuronal metabolic activity, BOLD signals can serve as proxies for neuronal activation. BOLD signals reflect more than just neuronal activity, however – they may be affected by respiration rate and heart rate, for example – and must be considered only rough estimates of neuronal activity.

Many fMRI meditation studies examine *functional connectivity* which is a measure of how activation levels of two or more brain regions fluctuate in synchrony over time. Brain structures operate as parts of larger functional networks. The strength of the inner organization of these networks and the strength of their positive and negative relationships to other networks vary over time and can serve as a measure of changes in brain functional patterns.

Hassenkamp et al. (2012) proposed a model of four alternating cognitive states underlying focused-attention meditation: (1) deliberate attention to a meditative object, (2) unintentional mind wandering, (3) awareness of mind wandering, and (4) shifting attention back to the meditative object. They had fourteen experienced meditators meditate on their breath in an fMRI scanner, press a button when they became aware of mind wandering, and then return their attention to their breath. Their results suggested two large-scale brain networks associated with these hypothesized cognitive states: a task-positive attentional network (the biological substrate for sustained attention, awareness of mind wandering, and shifting of attention), and a default mode network (the biological substrate for mind wandering). In a follow-up study, Hassenkamp and Barsalou (2012) argued the task-positive attentional network could be further subdivided into a salience network (awareness of mind wandering) and a central executive network (shifting and sustaining attention). They predicted that cumulative meditative activity over time might

alter the functional relationships between these systems in ways that might persist outside of meditative activity. Dividing the meditators in their initial study into low- and high-experience level groups, they discovered more experienced meditators showed greater degrees of functional connectivity between the dorsolateral prefrontal cortex (part of the central executive network) and the insula (part of the salience network) even when meditators were not meditating. The experienced meditators also showed greater decoupling of anterior and posterior portions of the default mode network. These results supported the idea that meditative practice might change functional connectivity in the brain.

Subsequent fMRI studies have explored differences in functional connectivity between the default mode network, the salience network, and various attentional/executive networks in (1) experienced and novice meditators, (2) persons higher and lower in trait mindfulness, and (3) pre- and post-mindfulness training interventions. The field has become mature enough to generate articles comparing and analyzing the findings of multiple studies (Boccia, Piccardi and Guariglia 2015; Fox et al. 2015; Fox et al. 2016; Young et al. 2017; Feruglio et al. 2021; Sezer, Pizzagalli and Sacchet 2022; Ganesan et al. 2022; Melis et al. 2022) as well as offering methodological critiques of research shortcomings.

As one might expect, study results vary depending on (1) the meditative technique studied, (2) the experience level of the meditators, (3) how mindfulness is measured, (4) the length and intensity of any mindfulness training involved, (5) the type of control groups (if any) employed, (6) the characteristics of the populations studied, and (7) the specifics of the research protocol. Additionally, fMRI studies rarely study entire functional connectivity networks, but often select single regions associated with networks as seeds. When a network is activated, however, not every region of the network is necessarily simultaneously activated, and regions chosen as seeds may be associated with different networks under differing conditions.

Despite these difficulties, certain regularities have emerged across studies. These include meditation- and mindfulness-related: (1) decreases in functional connectivity between the cuneus (part of the default mode network) and the salience network, (2) increased functional interconnectivity within the salience network, (3) increased functional connectivity between the posterior cingulate cortex (part of the default mode network) and the dorsolateral prefrontal cortex (part of the frontoparietal or ‘central executive’ network), (4) increased dorsomedial prefrontal cortex functional connectivity with the right anterior cingulate cortex, and (5) decreased functional connectivity between the right anterior cingulate cortex and the amygdala. These changes may reflect meditation-related increases in present-moment and interoceptive awareness, improved executive control over mind wandering, and improved emotional regulation.

8.4 Evaluation of contemplative neuroscience

One criticism of the role of Buddhist practitioner-researchers in contemplative neuroscience is that ideal researchers are ostensibly neutral – they should have no vested interest in proving the value of Buddhist practices but should instead disinterestedly explore evidence for and against their value. In reality, all researchers have interests, values, commitments, prior beliefs, and ideologies that can bias their research. On the other hand, over-zealous advocates can engage in questionable practices (not publishing negative results, p-hacking and massaging data, overhyping results in discussion sections, conferences, and press reports) that Buddhist practitioner-researchers ought to scrupulously avoid. This means they should be sufficiently open-minded to be critical of Buddhist-based hypotheses when the evidence suggests they are wrong. Another criticism of contemplative neuroscience comes from Faure (2017) who argues that the ontological, metaphysical, and soteriological claims and devotional practices that characterize more traditional forms of Buddhism constitute a valuable 'otherness' (as contrasted with late modern era philosophical commitments to empiricism, pragmatism, and physicalism) that should not be treated reductively or naturalized away. Despite these cautions and criticisms, the neuropsychological exploration of meditation is making steady progress in understanding how meditative practice affects brain structure and function.

9 Buddhism and cognitive neuroscience

The Buddhist tenet of *anattā* (non-self) has had a significant impact on psychologists, biologists, cognitive scientists, and philosophers trying to understand human selfhood and cognition in the wake of Gilbert Ryle's (1949) exorcism of the 'ghost in the machine'. This includes seminal philosophers like Francisco Varela, Evan Thompson, Shaun Gallagher, and Thomas Metzinger.

Chilean biologist, philosopher, and neuroscientist Francisco Varela studied Tibetan Buddhism with Chögyam Trungpa Rinpoche and Tuku Urgyen Rinpoche, and helped initiate the Mind and Life Institute dialogues between leading scientists and the Dalai Lama. Varela collaborated with Canadian philosopher Evan Thompson and American cognitive psychologist Eleanor Rosch to publish *The Embodied Mind: Cognitive Science and Human Experience* (1991), a work that envisioned cognition as embodied and enactive rather than representational. While not a Buddhist himself, Thompson grew up in an intellectual milieu (The Lindisfarne Association) that included many Buddhists and studied Asian philosophy at Amherst College. *The Embodied Mind* places the five fields co-constituting cognitive science (artificial intelligence, cognitive psychology, philosophy of mind, neuroscience, and linguistics) into dialogue with Merleau-Ponty's phenomenology, the Buddhist doctrine of *anattā* or 'non-self', and *Mādhyamaka* insights into *śūnyatā* (emptiness/groundlessness). Their idea of cognition as enactive and

embodied challenged the ‘cognitivist’ model of cognition as the computational manipulation of symbolic representations. Varela, Thompson, and Rosch accepted the Buddhist account of the mind’s ‘grasping’ at the existence of an independent, unitary self even when the evidence from meditative inquiry, an understanding of distributed brain processes, and newer models of cognition such as Minsky’s (1986) ‘society of mind’ metaphor suggested the insubstantiality of a unitary self. The book argued that knowledge emerges not from increasingly accurate representations of an organism-independent world, but from recursive processes characterized by operational closure that interact with and co-create an organism-interdependent world. According to this view, perception is perceptually-guided action, and cognition consists of recurrent sensorimotor patterns that enable it to occur. Thompson further refined enactivism in *Mind in Life: Biology, Phenomenology, and the Sciences of Mind* (2007) and *Waking, Dreaming, Being: Self and Consciousness* (2015).

American philosopher Shaun Gallagher coined the phrase ‘4E Cognition’ to propose that cognition is not only enactive and embodied, but also embedded and extended. Gallagher’s *Oxford Handbook of the Self* (2011) included contributions from Evan Thompson, Thomas Metzger, and Mark Siderits who were all influenced by or are scholars of Buddhist philosophy. Gallagher et al. (2023) recently proposed a ‘pattern theory of self’ that views the self as a pattern emerging from a plurality of self-organizing (bodily, pre-reflective experiential, affective, behavioural action-related, social/intersubjective, cognitive, reflective, narrative, and normative) processes. The authors conclude that the ‘composite, integrated and dynamic properties of the self-pattern appear compatible with the Buddhist psychological view concerning the processes and the dynamics of the mind-body system, in a way that reveals the non-self characteristic of existence’.

Thompson and Gallagher both argue on behalf of ‘self-as-pattern’ – a self that, while not independent and cohesive, is still *real* as pattern. By way of contrast, German philosopher Thomas Metzinger (2003) argues that the self and the world are both illusions projected by the brain. Metzinger views mental activities as ‘simulations’. He views the brain as a system that simulates possible realities and generates internal expectations and hypotheses in a top-down manner while being constrained by a bottom-up flow of sensory information that enables it to select from the realm of internal possibilities and generate a phenomenal reality through conscious representation. The brain creates representations that are ‘guesses’ about the world and seeks sensory information that confirms or disconfirms its representations. For Metzinger, we are never in touch with the noumenal world, but only our brain’s representations of it. The brain, conceived in this way, is self-organizing, without a ‘self’ to coordinate or view its activity. Metzinger’s approach, unlike that of Varela, Thompson, and Rosch, is strictly representational. Recently, Metzinger (2018; 2020) proposed a theory of ‘contentless’ Buddhist meditative experiences: meditative experiences in which the perception of self, objects, and time disappear. He

hypothesizes these ‘minimal phenomenal experiences’ are the non-perceptual, mode-neutral way the brain represents its internal modelling of its own ascending reticular arousal system (ARAS) tonic alertness signal.

The Buddhist tenet of *anattā* (non-self) is not a testable hypothesis. Whether one believes it aids in the understanding of human psychology or not depends on how one operationally defines what one means by ‘self’. While not testable, the tenet of *anattā* continues to intrigue and inspire philosophers, psychologists, and cognitive scientists, and is likely to continue to do so in the future. The nature of the ‘self’ lies at the heart of a cluster of seemingly unresolvable philosophical problems including the ‘mind-body’ problem, the ‘free-will’ problem, the nature of consciousness, and a deeper understanding of biological and psychological self-organizing systems. In the face of such perplexity, psychologists will continue to reach for new metaphors and novel sources of inspiration as they grasp for more adequate models that attempt to integrate human sense-making within a physicalist model of the universe.

10 Buddhism and psychedelic research

The relationship between Buddhism and psychedelics is a complicated one. There are a variety of meditative practices in Theravāda, Mahāyāna, and Vajrayāna Buddhism that can, under the right circumstances, induce extraordinary mental states that may include alterations in one’s sense of time, a dissolution of one’s sense of self or a merger of self-and-world, and powerful experiences of unbounded love. The Buddhist tradition views these states as exemplifying and vivifying the Buddhist teachings of emptiness and the interdependence and interpenetration of all phenomena, and the insubstantial nature of the self. It also sees experiences like these as allowing one to ‘see things as they actually are’ (*yathābhūañāṇdassana*, Pāli) and as steppingstones to awakening, Nirvāṇa, and liberation.

Psychedelic substances are capable of inducing similar kinds of states, but the Buddhist ethical precepts forbid consuming mind-altering substances. Despite the precept against intoxicants, many Western ‘convert’ Buddhists first became interested in Buddhism through their experiences with psychedelic substances. There are important cultural and historical reasons why the class of people interested in Eastern spirituality and the class of people interested in psychedelics substantially overlapped in the mid-twentieth century. As a result, Buddhist ideas concerning self, emptiness, and transcendence have had a major impact on the way psychedelic experiences are understood and interpreted by Western psychology (see Huxley 1954; Watts 1962). Psychologists Timothy Leary, Richard Alpert, and Ralph Metzner (1964) even based their guidebook for psychedelic usage on the Evans-Wentz translation of the *Tibetan Book of the Dead* (1927). Nevertheless, the degree to which psychedelic experiences are similar to altered states induced through

Buddhist meditation remains open to dispute. At the very least, Buddhist meditative altered states most often occur within the context of Buddhist ethical and soteriological principles, within a disciplined monastic setting, and under the guidance of an experienced teacher. Context –set and setting – make all the difference in terms of the specifics of altered states and how they are interpreted and integrated.

Studies by Pahnke (1963), Leary et al. (1963), Pahnke et al. (1970), and Grof et al. (1973) were among the first to document the spiritual and religious dimensions of psychedelic experience and its potential value for personal growth and transformation. The 1970 United States Controlled Substances Act and the 1971 United Nations Convention on Psychotropic Substances put a temporary halt to psychedelic research in the United States and abroad, but there has been a resurgence of interest in such research in past decade-and-a-half as evidenced by the creation of the Center for Psychedelic and Consciousness Research at Johns Hopkins University and the NYU Langone Center for Psychedelic Medicine. Much of that research is described by Pollan (2018).

The Johns Hopkins's Center uses psilocybin to induce spiritual experiences (Griffiths et al. 2008; Griffiths et al. 2011; MacLean, Matthew W. Johnson and Griffiths 2011; Griffiths et al. 2017). Psilocybin doses in the range of 20–30 mgs/70kg reliably result in both short-term and persistent changes on a large number of variables associated with wellbeing. The majority of participants in these studies report mystical experiences that are unitive, transcendent, sacred, and ineffable, and which they rate as either the most significant, or among the most significant, personal and spiritual experiences in their lives. In various studies they report persistent significant improvements in mood, attitude, life satisfaction, altruism, interpersonal closeness, gratitude, forgiveness, meaning, purpose in life, optimism, death transcendence, sanctification of strivings, daily spiritual experiences, religious faith and coping. Two studies suggest psilocybin-induced mystical experience can, at least under some circumstances, lead to long-term changes in openness to experience, one of the 'big five' personality traits on the NEO-PI-R inventory (MacLean, Matthew W. Johnson and Griffiths 2011; Griffiths et al. 2017).

The Griffiths et al. (2017) study is unique in that it studied the combined effects of different psilocybin dosages and different levels of support for daily spiritual practices. The low dosage psilocybin groups received doses too low to be considered psychoactive, in effect acting as a placebo control. Over the course of six months, the program offered either standard support (an average of seven hours of support) or high levels of support (an average of thirty-five hours of support) for spiritual practices that included daily sitting meditation, mantra recitation, and spiritual journaling. Those in the high support group engaged in these practices at approximately twice the rate of those in the standard support group. The participants in the high dose/high support condition surpassed the high-dose/ standard support condition in a positive direction on twenty-two of twenty-three longitudinal

variables – and both groups surpassed the low dose conditions on all variables. The study showed the long-term benefits of psilocybin-induced mystical experience and how daily spiritual practice enhanced those benefits.

The life changes documented in studies of psilocybin in non-clinical populations are supplemented by studies of the life changes documented in clinical populations. For example, Malone et al. cited the personal experiences of cancer patients receiving psilocybin in experiments at the NYU Langone research centre. One patient named 'Brenda' reported, 'I felt out of space and time in a way that was really, really, really comforting and beautiful'. Brenda went on to describe an experience of interconnectedness and unity:

> I was the cloud, I was everything, and that was the theme throughout the whole [experience], that I was all this – this was me. And it was so wonderful […] to believe that. And I still do – that is me. (Malone et al. 2018: para. 21)

While the target of treatment was her death anxiety, the cure was an experience of wholeness and oneness that is interpretable both from the point of view of Buddhist practice and positive psychology.

Beliefs about the relationship between mystical experience and wellbeing are quite ancient, but empirical research regarding that relationship is still in its infancy. Psychedelics have provided experimenters with a new tool for investigating that relationship. As this investigation proceeds, ideas generated from Buddhist philosophy and practice will continue to inform the field and be tested as hypotheses. There is much still to be learned about how persistent psychedelic-induced changes might be, and the factors that enhance or interfere with their instantiation and generalization.

As much as Buddhism has historically contributed to the understanding and interpretation of psychedelic experiences, care must be taken to assure it does not prematurely foreclose other possible understandings and interpretations in this nascent science. James (1902) and Katz (1978) emphasized the diversity of mystical experiences in differing religious traditions. A study like Griffiths et al. (2017) explores psychedelic experience in the context of spiritual practices that closely resemble Buddhist practice. How might these experiences and their sequalae have differed if psilocybin had been administered in the context of practices more closely resembling Christian, Kabbalistic, or Sufi practice? One cannot underestimate the role expectational set and contextual setting play in codetermining the content of psychedelic experience and how that experience is integrated into people's lives.

11 Buddhism and Western psychology: a critical appraisal

This article has traced the development of Buddhism's influence on Western psychology over the past 122 years, from William James's 1901–1902 Gifford lectures on religious experience and the mid-twentieth century engagement between Buddhism and psychoanalysis to contemporary investigations of mindfulness, prosocial attitudes, the psychedelic experience, the nature of cognition and selfhood, and the neuropsychology of meditation. Western psychology has been an important vector for Buddhism's growing influence on Western culture. Western psychology has also been a major influence on how many modern Buddhists naturalize and psychologize their faith. We are only a little more than a century into Western psychology's dialogue with Buddhism, and it is too early to tell whether the dramatic increase in psychology's engagement with Buddhism, especially in the past two decades, represents a short-lived generational trend or the beginning of a more long-lasting contribution to Western psychology and culture, much like the historical contributions of Buddhism to Chinese culture.

Buddhism's most significant contributions to Western psychology have been: (1) the idea that mindfulness, compassion, self-compassion, loving-kindness, and equanimity may be teachable skills relevant to symptom reduction and enhanced wellbeing, (2) the idea that meditation may be a means of enhancing mental hygiene and personal growth, (3) the challenge the Buddhist doctrine of *anattā* (non-self) poses to reified conceptions of selfhood, (4) a way of understanding the potential value of psychedelic experiences in clinical and positive psychology settings, and (5) the way the Buddhist doctrine *śūnyatā* (emptiness) reinforces pre-existing Western process-relational and ecological thinking and challenges Western conceptions of individualism. Lastly, the values of loving-kindness, compassion, mindfulness, acceptance, non-harming, non-greed, and moderation of desire that are crucial to the Buddhist conception of optimal human wellbeing serve as an important countercultural critique of contemporary Western emphases on accumulation, competition, wealth, status, and power as the ultimate measure of a life well lived. This critique has the potential to play an important role in the development of positive psychological conceptions of eudaimonic wellbeing.

The exponential growth in research on mindfulness, and the ways mindfulness has worked its way into every interstice of Western culture – not only in mental health and positive psychology, but also in corporate, educational, correctional, and governmental settings, on sports teams, in military and first-responder training, and in churches and synagogues is truly remarkable. The United Kingdom's Mindfulness All-Party Parliamentary Group's *Mindful Nation UK* (2015) with its recommendations for using mindfulness in British schools, the National Health Service, private business settings, and the criminal justice

system is just one measure of mindfulness's penetration into Western societies. Another is a recent survey sample of the U.S. population (Lam et al. 2023) that found 49.3% had lifetime exposure to meditation and 35% had practiced it in the past year.

Innovative psychological ideas have had major cultural impacts in the past – one need only think of how psychoanalysis, behaviourism, cognitive-behaviourism, humanistic-existential psychology, cognitive psychology, and neuropsychology have changed the way average people understand and contextualize their lives. Some influences seem longer-lived than others. The cultural capital of psychoanalysis, for example, has declined in recent decades, although many of the ideas it introduced persist in the newer therapies that have succeeded it and in the culture writ large. It is still too early to tell how meaningful and lasting the 'mindfulness revolution' will prove to be.

It is also too early to evaluate the long-term impact of current research in affective neuroscience and the neurobiology of meditation. As Kuhn (1962) points out, research paradigms have a limited life-span before they are dislodged by newer ones. Buddhist-inspired research is adding to our cumulative knowledge of how the central nervous system, and the psycho-neuroendocrine and psycho-immunological systems work, but over time the intensive focus on mindfulness, meditation, and compassion may yield to other research interests. The focus on these specific topics may say more about the current moment in Western culture than they do about the basic scientific imperative to understand the inner workings of organisms.

It is also too soon to evaluate the long-term effect of the Western psychologization and naturalization of Buddhism on the future of Buddhism as a religion. If one considers the trajectory of other major contemporary religions, 'traditional', 'conservative' and 'fundamentalist' forms of Christianity, Judaism, and Islam seem to be thriving more than reformed, liberalized, or modernized ones. It's possible that modernized forms may prove to be transitional waystations to lives that are 'spiritual but not religious', secular, agnostic, or atheist rather than being living religious traditions that carry forward into the future. Indeed, there is some evidence that many Western 'convert' Buddhist communities are aging out without being replaced by an influx of the offspring of 'convert' Buddhists or younger converts.

Religions are always evolving, however, and the ideas they introduce can endure over time, reshaping the broader cultures in which they develop. During Song Dynasty China, the neo-Confucians severely criticized the Buddhists, but at the same time incorporated Buddhist tenets into their core doctrine. Buddhism, Confucianism, neo-Confucianism and Taoism continue to inform contemporary Chinese culture in important ways, even for those who eschew any religious identification. Only time will tell whether the dialogue between Western psychology and Buddhism will leave a similar indelible impression on the West.

Attributions

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Further reading

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