MAI Journal A NEW ZEALAND JOURNAL OF INDIGENOUS SCHOLARSHIP

DOI: 10.20507/MAIJournal.2021.10.2.1

WHAKAPIKI WAIRUA

Co-designing and implementing a Māori mindfulness mental health intervention in a wharekura

*Marama McDonald**
Waikaremoana Waitoki†
Anna Rolleston‡

Abstract

This article explores the process of co-designing a mātauranga-Māori-informed mindfulness intervention with rangatahi in a wharekura and examines the effects on wellbeing. Mahitahi co-design methodology underpinned the design, implementation and evaluation of the intervention, and quantitative psychological tests measured improvements in wellbeing and dispositional mindfulness. Findings showed positive indications for a decrease in levels of psychological distress, improvements in Māori quality of life domains, and higher levels of dispositional mindfulness. The effective mātauranga-Māori-informed wellbeing components of the intervention were he āhuru mōwai, mahi a ngā tīpuna, ngā kaitiaki, te taiao, whanaungatanga, and hohou te rongo. Future application of the intervention in mainstream schools and communities is needed to assess the efficacy of the intervention for rangatahi in other environments, the sustainability of mindfulness practice for rangatahi, and the long-term effects on wellbeing.

Keywords

rangatahi Māori, mātauranga Māori, mindfulness, co-design, intervention, mental health

Introduction

Mindfulness-based interventions for rangatahi Māori need to encompass cultural paradigms that recognise the inherent strengths, qualities and perspectives of rangatahi Māori; incorporate Māori methods of healing to remedy the transgressions placed upon the Māori spirit by historical trauma (Wirihana & Smith, 2014); and cultivate the foundations of happiness from within a Māori wellbeing framework (McDonald, 2016).

Mindfulness-based interventions and wellbeing

Mindfulness-based interventions aim to promote mental health and wellbeing and minimise mental health risk (McKeering & Hwang, 2019; Sapthiang

* Ngāti Kauwhata. Senior Research Fellow, The Centre for Health, Tauranga, New Zealand. Email: moanamoko@gmail.com
† Ngāti Hako, Ngāti Mahanga. Senior Research Fellow, Waikato University, Hamilton, New Zealand.
‡ Ngāti Ranginui, Ngāi Te Rangi, Ngāti Pūkenga. Director, The Centre for Health, Tauranga, New Zealand.

et al., 2019). Mindfulness practice evolved from ancient Buddhist religious philosophies and meditative practices, which sustained humans in their quest for happiness, wellbeing and spiritual enlightenment (Bodhi, 2011; Neves-Pereira et al., 2018; Shapiro et al., 2006). Today, secular mindfulness is described as a way of being that involves the cultivation of awareness that arises from paying attention on purpose, in the present moment, non-judgementally (Kabat-Zinn, 1996). Mindfulness allows people to understand how emotions and thoughts affect health and wellbeing, and reveals ways to cultivate the mind–body connection to rebalance and sustain wellbeing (Mental Health Foundation, 2011).

A number of studies have shown the beneficial effects of mindfulness-based stress reduction (MBSR) on enhancing aspects of coping with stress, improving mental health (Grossman et al., 2004; Hofmann et al., 2010) and effectively managing self-destructive thoughts and emotions (Le & Gobert, 2015). Practising mindfulness may also create positive physiological changes within the brain, especially in the areas of learning and memory, emotion regulation, sense of self and perspective taking (Holzel et al., 2011). Mindfulness interventions have been shown to reduce trauma-related symptoms and reduce the negative effects of stress and trauma, including adverse childhood experiences (Gallegos et al., 2015; Ortiz & Sibinga, 2017).

Aotearoa New Zealand context

In Aotearoa New Zealand, mindfulness programmes have generated significant interest within health, education and workplaces (Bernay et al., 2016; Simpson & Mapel, 2011; Sistig et al., 2014). Although school-based studies are limited, findings on the efficacy of mindfulness programmes show a positive association with enhanced wellbeing, including increased positive affect and outlook, increased calmness, reduced stress, increased focus and attention, enhanced self-awareness and the development of positive relationships (Bernay et al., 2016; Rix & Bernay, 2014). Secular mindfulness, as described above, can make important contributions to wellbeing for adolescents, in particular, by decreasing negative mental traits (affective disturbances, anxiety) and increasing positive mental states (e.g., positive affect, prosocial functioning) (McKeering & Hwang, 2019). However, its divergence from religious and spiritual foundations may render it less effective for Indigenous and Māori environments where spiritual wellbeing is integral and is a cornerstone of health and wellbeing models.

Mindfulness and Indigenous wisdoms

Mindfulness resonates with ancient Indigenous wisdom (Le & Shim, 2014) and has demonstrated efficacy and cultural suitability within Indigenous communities (Dreger et al., 2015; Le & Proulx, 2015; Le & Shim, 2014). Mindfulness in an Indigenous context is interlinked with worldviews that are strongly underpinned by spiritual elements, cultural wellbeing traditions and a deep awareness of one's connections to the land, nature, family and ancestors. Mindfulness-based interventions that incorporate Indigenous mindfulness traditions and concepts have resulted in improvements in stress management, immune function, positive affect and self-awareness, greater focus and decreased suicidal thoughts (Le & Gobert, 2015; Le & Shim, 2014). These studies suggest that mindfulness concepts underpin many traditional Indigenous practices.

Mindfulness and Māori spirituality

Mātauranga Māori is a cultural system of knowledge that reflects a unique Māori worldview, including traditional knowledge and culture that is passed down through the generations in many forms, such as stories, songs, dances, art and teachings (Whaanga et al., 2017). It is an evolving knowledge system that has helped Māori to adapt to their changing relational, spiritual and ecological environments, protecting and sustaining a relational and spiritual relationship with the natural world (Royal, 2002). Historically, Māori wellbeing was reliant on maintaining relationships of harmony and unity with the natural and spiritual realms (Hanara & Jackson, 2019; McDonald, 2016). Everyday life was reliant on a multisensory awareness in the present moment; for example, sea, moon and star patterns, changes and cycles in nature were carefully observed to ensure wellbeing and safety, and to avoid harming and depleting the landscape, flora, fauna and wildlife (Mead, 2012; Tawhai, 2013). Karakia were also offered to ensure protection and guidance, and to create a union with ancestors, the environment and celestial realms (Durie, 1999; Rewi, 2010).

Many Māori cultural practices foster a relational existence and pathway to spiritual enlightenment and connection, including but not limited to meditative practices such as karakia and nohopuku. Ascribing spiritual qualities to mahi toi can be seen in narratives on the origin of particular arts. Te Mātorohanga's account of Mataora's journey to bring tā moko from Rarohenga to the world of humankind renders the artform of tā moko sacred through its direct connection to the atua (Jahnke,

2010). This sacredness is further reinforced by the types of karakia performed before and after the process. The singing that accompanied the practice of tā moko was also viewed as a mechanism to cope with the pain (Jahnke, 2010). Higgins (2004) describes the karakia performed for the process of tā moko as a form of "mental anaesthetic" (p. 117). Scientists are now proving that listening to music, and singing, reduces stress in both physiological and psychological domains (De Witte et al., 2020). Mindfulness is often described as an effective tool to help people regulate their emotions. Kirihaehae can be seen as fulfilling a similar role for Māori, a culturally accepted way to cope with grief and release overwhelming emotions (Kingi et al., 2017).

Māori continue to embody a multisensory, contemplative and spiritual interaction with the world. Activities that stimulate the creative process and the multisensory connection to the natural world are evident in karakia, mōteatea, tā moko, kapahaka, whakairo and waka voyages, and for those who still practise them, traditional methods of hunting, fishing and cultivating kai, and astronomy.

Whakapiki Wairua: A study of a mindfulness intervention in a wharekura

In 2018, research was funded by the New Zealand Health Research Council Māori postdoctoral funding scheme to design a Māori mindfulness-based intervention in a wharekura and to investigate its effects on rangatahi wellbeing. The postdoctoral Māori health researcher led the research study with the support of an assistant researcher with expertise in mātauranga Māori and a Kaupapa Māori advisory group.

Methodology

Kaupapa Māori Mahitahi approach

Mahitahi is a Māori co-design methodology that was used to co-create the Māori mindfulness-based intervention, underpinned by mātauranga and rangatahi perspectives of wellbeing. Co-design refers to a research approach involving equitable collaboration between researchers and participants using creative participatory methods. Participants are considered to be the experts of their own domain and experience, and the researchers facilitate their involvement in the research process. The Mahitahi approach draws from participant-led co-design methodology, adapting co-design concepts like mindsets and personas to be reflective of Māori and rangatahi worldviews. However, it is also distinct from mainstream co-design methodology, which is underpinned by Western methods of engagement, design and thinking, drawing instead from Māori design practices such as moko and methods of collaboration, engagement and support such as wānanga, tuakana–teina and whanaungatanga. The Mahitahi co-design process spanned three years, from February 2018 to November 2020.

Mahitahi and wānanga

The Mahitahi process occurred within wānanga. Wānanga involve practices and procedures that lead to the creation, understanding and dissemination of knowledge (Waitangi Tribunal, 1999). Therefore, wānanga is a space engineered to foster creativity and Māori co-design methods. There were five two-day wānanga in year one. The purposes of the wānanga were to (a) explore rangatahi experiences and perspectives of mental health and wellbeing, (b) experiment with a range of mindfulness tools from te ao Māori and Western science and (c) design a Māori mindfulness intervention. The wānanga were co-facilitated by the assistant and primary researcher. The wānanga were held at Te Wharekura o Mauao with haerenga to various cultural sites of significance in the local natural environment. The wānanga took place in a building called Mauao, named after the tipuna maunga of the local iwi. This space had been specifically designed for wānanga-style learning. The rangatahi were familiar and comfortable with a wānanga-style learning and identified a preference of wānanga over shorter sessions.

The Mahitahi approach was collaborative, experimental and adaptive. The approach was underpinned by specific mindsets and values that encouraged creative problem-solving. We adopted a flexible approach to the wānanga, coming with prepared activities but staying in tune with rangatahi, to their learning styles, stamina, concentration levels and engagement, and adapting accordingly. Te reo Māori and English were spoken. As wānanga evolved, the process was refined to create culturally relevant, rangatahi-centred mindfulness-based activities.

An important aspect of co-design methodology is the mindsets that underpin the co-design methods. The Mahitahi methodology and mindsets were driven by Māori concepts and values.

Mahitahi mindsets

Mahitahi—This mindset is encapsulated in the whakataukī "Kotahi te kōhao o te ngira e kuhuna ai te miro mā, te miro pango, te miro whiro". This refers to the importance of connections and

collaboration in supporting a common vision. Collective, collaborative approaches to discussions and activities were preferred in favour of individual approaches. A collectivist approach to wellbeing aligns with an Indigenous worldview (McDonald, 2016) and underpins many of the traditions and cultural practices within te ao Māori.

Mahia te mahi—This mindset is reflected in the whakataukī "Mā te ringa raupā ka eke".

This mindset recognises that co-design research is action oriented, with an emphasis on doing, making, creating and testing in real-world scenarios (IDEO, 2015).

Mahi toi—The importance of creativity is reflected in the whakataukī "I orea te tuatara ka patu ki waho". This refers to the need for creative thinking, adaptability and perseverance when problem-solving. Creativity was applied to all aspects of the design process, whether it was through problem-solving during group physical challenges, collective visual art projects, moko designs and narratives or through visualisations connecting to kaitiaki and tīpuna. Most importantly, it was often rangatahi led, whereby they would adapt an activity to be more relevant and enjoyable.

Whanaungatanga

Whanaungatanga in research identifies one's connectedness and offers a culturally appropriate engagement process with Māori on research-based kaupapa (Bishop, 1996). Pre-existing relationships between the researchers and rangatahi through whakapapa and as whānau members and previous kaiako mentor positions at the wharekura provided a strong foundation for this research. Connections were quickly and seamlessly formed and reinforced through Mahitahi activities of preparing meals together, looking after each other, respecting the roles of tuakana–teina, and through kotahitanga.

Mahitahi rangatahi collaborators—participants

Rangatahi attending Te Wharekura o Mauao in Tauranga were selected to collaborate in the co-design, trial and evaluation of the intervention. The study goals and rationale were presented to kaiako at Te Wharekura o Mauao during a weekly hui. Inclusion criteria were rangatahi in Years 9–12 attending Te Wharekura o Mauao, rangatahi that would benefit from the study and rangatahi that would contribute to the study. Exclusion criteria were any rangatahi with a serious mental illness or who had recently suffered trauma. Twenty-one rangatahi were purposively selected from the identified group of rangatahi; gender was self-identified by the rangatahi, and a mix of genders was sought by the researcher. Two rangatahi withdrew from the research during the first year. Four additional rangatahi were recruited for the intervention phase, bringing the total to 23 rangatahi. Information sheets and consent forms were available to the rangatahi in te reo Māori and English. Both parental and rangatahi consent was obtained (range: 14–18, gender ratio: 11 males 12 females). Ethical approval was obtained from the University of Waikato Human Research Ethics Committee.

Procedures

Identifying the mental health needs and experiences of rangatahi

Three main exercises were used to explore perspectives, beliefs and experiences of mental illness and rangatahi reflections of the intervention activities: *Post-it whakawhiti kōrero sessions*—group discussions using Post-it notes to write down thoughts and feelings; *rangatahi personas*—creating fictional users or participants that give insights into the diverse lived experiences, needs, behaviours and goals of the participants (Dam & Siang, 2020); and *visual diaries*—documenting participants' feelings, thoughts and creative expressions during wānanga.

Mindfulness-based practices and activities

The Māori mindfulness intervention was co-designed during five wānanga in the first year. The following mindfulness-based activities were explored in each wānanga and refined by rangatahi and researchers for the final intervention: hohou te rongo (meditations, visualisations and karakia), whakapakari tinana and hinengaro (resiliency activities) and mahi toi (creative arts).

Intervention

The final intervention was implemented in the second year over 10 months (March to November 2019) within eight wānanga. Participants were administered baseline psychological tests (Kessler Psychological Distress Scale [K-10] and Mindful Attention Awareness Scale for Adolescents [MAAS-A]) at two weeks pre-intervention and at one week post-intervention. They were also given a holistic Kaupapa Māori Quality of Life (Māori QOL) assessment (modified Short Form 36 Health Survey Questionnaire [SF36] questionnaire) to look at the quality of life measures

appropriate to Māori. A Muse brainwave sensing device that measures brainwave activity during meditation was also administered pre-intervention and at six months mid-intervention. In addition, Post-it note whakawhiti kōrero were conducted throughout the wānanga to assess intervention satisfaction and feedback. Participants also wrote reflections during each wānanga in a visual diary. Researcher observations were recorded via an iPad and in written form. Thematic analysis was applied to data gathered from whakawhiti kōrero, researcher observations and visual diaries. The themes identified from the data were used to frame the co-construction of fictional rangatahi personas based on rangatahi experiences of the Māori mindfulness intervention. Four fictional rangatahi personas (Oceana, Atawhai, Te Rangi Āio and Iro) were created. A Kaupapa Māori moko analytical framework was applied to the rangatahi personas to analyse and interpret the data.

Quantitative data measures

Depression and anxiety were assessed using the K10 (Kessler et al., 2002), which is a measure of psychological distress, with a higher score indicating more psychological stress. Dispositional mindfulness was assessed using the MAAS-A, a validated psychometric measure of trait or dispositional mindfulness in adolescents, with higher scores reflecting higher levels of dispositional mindfulness (Brown et al., 2011). The Muse technology was used to measure improvements in meditation. The Muse headband is a wearable device developed by InteraXon in Canada that is connected to a meditation application that is played on an iPad. Users are guided through a meditation session during which they are provided with neurofeedback on their brain activity. In adolescents, Muse mindfulness training has been associated with improved classroom behaviour and increased mindfulness (Martinez & Zhao, 2018). The Muse was used to measure the amount of time (seconds) participants spent in a calm brainwave state during a three-minute meditation. Muse uses a unique and complex combination of the various brainwaves to determine active, calm and neutral states. Holistic wellbeing was assessed using the Māori QOL (Rolleston et al., 2017) questionnaire. The Māori QOL measures wellbeing across four domains—taha tinana, taha hinengaro, taha wairua and taha whānau—where a higher score reflects higher wellbeing. The Māori QOL was adapted for use with rangatahi Māori.

The quantitative data set had 23 participants. Two of the original 23 participants were excluded because they suffered significant trauma in their personal lives during the intervention. Because the intervention is designed as a preventative mental health approach, it is not deemed suitable for rangatahi experiencing acute mental distress or trauma. From a Kaupapa Māori perspective, it was important to continue to include the two rangatahi in the experience so they continued to feel supported; they are not, however, represented in the data.

Quantitative analysis

Values are presented as mean (standard deviation) for all variables except the durations of active, neutral and calm states, which are reported as median (interquartile range) because their distributions were significantly skewed. Similarly, pairwise Student's *t*-tests were used to compare the mean changes in K10, MAAS-A, Māori QOL and percentage of time spent in a calm state per person, and pairwise Wilcoxon signed-rank tests (including the Pratt method of handling zeros) were used to compare the central locations of the distributions of time spent in each of active, neutral and calm states. R statistical software version 3.6.1 was used for analyses.

Kaupapa Māori qualitative data analysis

Thematic analysis was used to identify and analyse the themes within the data and to interpret both the way participants made meaning of their experience and the wider social and cultural context that impinges on those meanings (Braun & Clarke, 2006). Kaupapa Māori analysis allowed the researcher to consider and interpret the data through a Māori worldview. The mātauranga Māori study advisor worked alongside the researcher to apply a Māori worldview, identify Māori conceptual themes and synthesise the data into a moko narrative and design. Moko was used as the analytical framework to interpret the data. This mātauranga Māori method of design, storytelling and interpretation reflects Māori thought, expression, models and concepts of healing, transformation and wellbeing. The use of moko as a framework is akin to the pūrākau narrative methodology, which provides a culturally meaningful template with which to understand human behaviour (Lee, 2005). Moko was also a practice that rangatahi participants were engaged in and passionate about. The process of moko design and interpretation involved understanding and processing the data through feeling, thinking and metaphysical processes.

Results

Quantitative results

There were statistically significant improvements in depression and anxiety (reduction in K10, $p = 0.0001$), dispositional mindfulness (increase in MAAS-A, $p = 0.029$), and in most components of the Kaupapa Māori QOL measure (see Table 1). Specifically, there were significant improvements in the tinana, hinengaro and wairua components. The change in whānau measure was not statistically significant ($p = 0.07$); however, it should be noted that rangatahi had high levels of whānau wellbeing pre-intervention (see Table 1). Data from the Muse application (see Table 2) showed improvements in the time rangatahi spent in active, neutral and calm brainwave states; however, these were of borderline statistical significance ($p = 0.05$ to 0.06)

Kaupapa Māori qualitative results

Results from the Kaupapa Māori and thematic analysis of researcher observations, whakawhiti kōrero and visual diaries identified four broad themes, which provided the framework for the rangatahi personas: (a) Rangatahi identity and whanaungatanga, (b) Places and spaces of wellbeing, (c) Application and impacts of meditations and (d) Guidance and reflections from te ao Māori. Kaupapa Māori and thematic analysis was applied to the personas, and six themes were identified that reflect the significant Māori mindfulness components that enhanced wellbeing for rangatahi participants: (a) He āhuru mōwai—a calm place, a sheltered haven; a safe space and place for rangatahi to be themselves without judgement; (b) Mahi ā ngā tīpuna—connecting

TABLE 1 Pre-test and post-test results of K10, MAAS-A and Māori QOL

	Pre-intervention	Post-intervention	Change per person	p-value (of change per person)
K10	24.1 (6.32)	19.8 (4.64)	–4.3 (4.14)	0.0001
MAAS-A	.5 (0.48)	3.8 (0.65)	0.21 (0.408)	0.029
Māori QOL				
Tinana	14.1 (2.92)	16.3 (3.08)	2.2 (2.66)	0.001
Hinengaro	13.9 (4.74)	17.0 (3.57)	3.0 (4.21)	0.003
Whānau	22.5 (3.28)	24.1 (3.71)	1.6 (3.76)	0.070
Wairua	23.3 (3.44)	24.7 (3.45)	1.4 (2.73)	0.031
TOTAL	**73.7 (11.14)**	**82.0 (9.64)**	**8.2 (7.65)**	**<0.0001**

TABLE 2 Pre-test and post-test results of the Muse

	Pre-intervention	Post-intervention	Change per person	*p*-value (of change per person)
Muse app, secs				
Active	6 (3, 19)	(0, 5)	–3 (–13, 0)	0.055
Neutral	90 (82, 116)	82 (30, 100)	–17 (–56, 16)	0.054
Calm	77 (52, 92)	98 (68, 150)	27 (–18, 63)	0.050
% time in calm state	40 (18.2)	57 (27.4)	17 (33.1)	0.021
Whānau	22.5 (3.28)	24.1 (3.71)	1.6 (3.76)	0.070
Wairua	23.3 (3.44)	24.7 (3.45)	1.4 (2.73)	0.031
TOTAL	**73.7 (11.14)**	**82.0 (9.64)**	**8.2 (7.65)**	**<0.0001**

mental health and wellbeing to the practices of tīpuna and learning about traditional beliefs and philosophies of wellbeing; (c) Ngā kaitiaki—incorporating the role of animals, ancestors and natural phenomena as guardians to guide and help rangatahi through life's challenges; (d) Te taiao—practices that embrace and interact with the natural environment and elements for healing, particularly cultural sites of significance; (e) Whanaungatanga—collective approaches to facilitate wellbeing and a focus on building strong relationships and bonds; and (f) Hohou te rongo—cultivating peace, meditations that are inclusive of Māori worldviews.

Fictional rangatahi persona and moko

Due to the depth of data and analysis, only one rangatahi moko narrative is described here. The remaining moko narratives are available in e-book format. This moko represents the themes from the qualitative analysis of the rangatahi personas and Mahitahi boards.

Table 3 illustrates (a) the six key themes from the data, (b) the corresponding effects on wellbeing and (c) the tohu from the moko design pictured in Figure 1 that represents the theme and its mātauranga Māori interpretation.

The results from both the quantitative and Kaupapa Māori qualitative methods and analysis reported above strongly support the positive impacts of the Māori mindfulness intervention on rangatahi wellbeing. This reflects a complementary approach to research that provides a basis from which further Kaupapa Māori approaches can be developed and implemented without being unduly weighed down by narrow clinical or Western scientific notions of data, methods and outcomes.

Discussion

This study found that a Kaupapa Māori mindfulness programme co-designed by rangatahi was associated with decreased depressive and anxiety symptoms, improvement in quality of life and higher levels of being in a calm state than before the intervention. The Mahitahi co-design approach led to the creation of a mindfulness mental health intervention that is culturally designed to the needs, aspirations, realities and perspectives of rangatahi Māori who are schooled in a mātauranga-Māori-based environment. The novel rangatahi persona and moko co-design methods provided rangatahi with a culturally empowering and relevant process to express their views and experiences of the intervention. The moko narratives, the design and its interpretation provided an in-depth cultural understanding of the way stress and mental illness affects rangatahi wellbeing, how they process those experiences and the Māori mindfulness components that are effective in enhancing wellbeing.

Rangatahi Māori are often affected by multiple and accumulated stressors that affect many areas of wellbeing. Stress, especially accumulated and chronic stress in childhood and adolescence, has been linked to poorer mental health outcomes (Kessler et al., 2010). This intervention highlighted the importance of rangatahi having a space in their lives where they can feel safe, stress free, calm, supported and free from judgement—their he āhuru mōwai. This is significant in today's world, where social media has increased the opportunities for rangatahi to be exposed to bullying, unsafe behaviour and negative judgements (O'Keeffe & Clarke-Pearson, 2011).

For rangatahi Māori, states of mindfulness, calmness and peacefulness were most effectively accessed within te taiao, especially those places that were culturally significant, such as their tipuna maunga, aligning with wider Indigenous concepts of mindfulness (Le & Proulx, 2015; Le & Shim, 2014). While wharekura education exposes rangatahi Māori to mātauranga Māori and experiences within te taiao, these findings indicate that the more rangatahi have exposure to and spend time in the natural world and cultural sites of significance, the greater their sense of spiritual wellbeing, peace, mindfulness and connectedness.

The concept of hohou te rongo is connected to Māori holistic concepts of wellbeing and was considered by rangatahi to be an effective tool for managing emotions, which supports wider mindfulness findings that mindfulness is an effective and healthy way for adolescents to manage stress and promote emotional regulation (Chi et al., 2018). Kaitiaki was the other aspect unique to a Māori mindfulness approach and acutely connected to the natural world. Interestingly, while several rangatahi could describe what kaitiaki were, many had limited experience and understanding of the role of kaitiaki in supporting spiritual wellbeing. However, by the end of the intervention, rangatahi were engaged in and connected to kaitiaki-based mindfulness activities. Both hohou te rongo and kaitiaki components restore connections to te ao wairua and, in doing so, address the impact of intergenerational trauma on the Māori spirit.

This research also suggests that mainstream mindfulness programmes that do not emphasise

TABLE 3 Māori co-design analysis framework

Effective components of Whakapiki Wairua—Māori mindfulness intervention	Effects on rangatahi wellbeing (rangatahi participant quotes)	Mātauranga Māori moko interpretation—Oceana's journey
He āhuru mōwai	Rangatahi feel accepted, safe, relaxed, calm, at peace. "It's place where I can just relax and be away from all the bullshit that goes on in my life." (Participant 1, female, 16 yr) "I don't feel belittled or ignored." (Participant 4, female, 17 yr) "Has made me feel comfortable around others and where I can be myself." (Participant 12, male, 17 yr)	Oceana's āhuru mōwai was created by her kuia and koroua. Her kuia and koroua have been represented as mangopare, a symbol of resilience, security, strength and determination. The hammerhead shark has several pores distributed widely on the head that act like antennae, giving them foresight and superior detection skills. Oceana's kuia and koroua also have that capacity by virtue of their life experience and wisdom. Pūwewere pays homage to her matriarchal line and the role of the matriarch, her kuia, in creating a safe home, just like the spider, whose web will endure despite any adversities.
Mahi a ngā tīpuna	Practices enhance mana and foster connectedness, peace, happiness. "Linking all our mahi whether its toi or meditating to te ao Māori, to the world of our tīpuna, getting 'in the zone', Māori did that a lot." (Participant 8, male, 16 yr) "Stay true to my Māoritanga and enhance the gift of matakite. Meditate in my own time and swim in the rivers and sea to wash all the taumahatanga off my shoulders. Implement ngā karakia ki to matou atua (prayers of our gods)." (Participant 15, female, 17 yr)	Oceana's connection to the mahi of her tīpuna is through nature and the atua. On the moko this is depicted as ngā hau o Tāwhirimātea and ngā unaunahi nui o Tangaroa Whakamautai. Her meditation practices are whakawātea, using the wind to clear and whakapurenga, using the water to cleanse.
Ngā kaitiaki	Rangatahi feel supported, guided and connected to te ao wairua. "The negative energy I had during my first meditation is the energy circling the pito of the stingray and exiting the end of the tail—the positive energy is still circling the mauri of the whai." (Participant 5, male, 17 yr) "Kaitiaki and whānau will always have my back. It is not about what is seen but what is felt." (Participant 11, female, 17 yr)	The pūrerehua guides Oceana through her own metamorphosis and her process of breaking free from constraints. Tīwaiwaka is one of the very few animals privileged to enter the presence of Hine-nui-te-pō and return. Tīwaiwaka teaches Oceana how to move from the darkness into the light through movement, laughter and a zest for life.

TABLE 3 *Continued*

Effective components of Whakapiki Wairua—Māori mindfulness intervention	Effects on rangatahi wellbeing (rangatahi participant quotes)	Mātauranga Māori moko interpretation—Oceana's journey
Te taiao	Rangatahi feel at peace, calm, connected and can release negative energies and emotions. "Going into the bush makes me feel at ease and at peace, it is my safe haven." (Participant 7, female, 17 yr) "Every now and then I stop, and I just focus and calm myself, focus on my breathing, my heartbeat, nature (birds, insects, rain, wind)." (Participant 18, female, 17 yr)	Ngā unaunahi nui o Tangaroa whakamautai and ngā hau o Tāwhirimātea are patterns on Oceana's moko that originate from the taiao and the moko is a vessel for a heightened connection to the represented elements. The puhoro symbol teaches Oceana of the different principles of movement associated to adaptation: knowing when to act like the flow of water to grow and when to act with power and velocity like the wind.
Whanaungatanga	Rangatahi feel supported; kotahitanga and manaakitanga are fostered and feelings of isolation are reduced. "I love hanging out and spending time with my friends and I care a lot for all of them. I love picking my friends up and making them feel happy when they are down." (Participant 1, female, 16 yr) "The environment makes us feel like we are all included and we're all Māori." (Participant 4, female, 17 yr) "It is a bonding kaupapa with your peers and pouako." (Participant 17, male, 17 yr)	This is represented with the pākati symbol. Pākati is a whakapapa notch illustrating a continuous connection from the first to the last notch. Each notch is a metaphor for collective bonds between generations of whānau: past, present and future. For Oceana, the lesson is to thrive. She must learn from her past, so that she can live in the present and be hopeful for the future.
Hohou te rongo	Rangatahi feel calm, peaceful and at ease, and can manage emotions (self-regulation), stress and negativity. "Meditations make me feel relaxed, relieved, free, more connected to everything and energetic." (Participant 2, male, 16 yr) "I have learnt how to let go of things that aren't good for me, bad vibes, bad people in my life, anxiety, a little bit of my fear." (Participant 13, female, 17 yr)	Oceana overcame negative emotions and stress through mediations using Ngā hau e wha o Tāwhirimātea and Ngā unaunahi nui o Tangaroa Whakamautai. The koru spiral symbolises a new shoot, like the fern frond, and represents Oceana's emotional, spiritual and physical growth from the mindfulness practices.

collectivity and relationships will have poorer outcomes for rangatahi Māori. Rangatahi cited whanaungatanga as one of the key components in the programme that enhanced their engagement with and enjoyment of the intervention and its efficacy. This collective approach was also an integral aspect of ngā mahi ā ngā tīpuna, where collectivity underpinned the rangatahi experiences of tīpuna traditions that enhance mindfulness, such as mahi toi. The uniqueness of this approach is that while mainstream mindfulness is focused on engagement in the present, from a Māori worldview mahi ā ngā tīpuna and whanaungatanga provide a context for mindfulness where engagement in the present is connected to the collective bonds that exist between genealogical ties to one's past, present and future.

The quantitative results reflect Western psychology. Improvements in emotional, physical and spiritual wellbeing aspects of quality of life, a reduction in anxiety and depressive symptoms, and an increase in dispositional mindfulness were the primary significant findings from the quantitative data. Mindfulness literature (McKeering & Hwang, 2019; Sapthiang et al., 2019), supports the findings from the quantitative data for this work, and therefore, the findings contribute in a positive way to both knowledge fields.

Limitations

This intervention was designed specifically for rangatahi within a wharekura, a setting which is underpinned by Māori pedagogical practices, beliefs and rituals. Māori mindfulness practices, whakataukī and creation stories were relevant to a Māori immersion setting and the rangatahi, and were critical in forming the connectedness within the group, to the practice of mindfulness and to te ao wairua. Further studies will need to explore whether this intervention can be translated and adapted for rangatahi Māori in mainstream schools and whether the skills obtained by rangatahi from this study translate to real-world settings in their whānau and community.

A further potential limitation is the lack of a control group. The use of a control group does not align with Kaupapa Māori Mahitahi methodology because it excludes a portion of the participant population from an intervention that is hypothesised as beneficial.

The sustainability of such an intervention will also require further training and development of facilitators in Māori mindfulness practices and tools. While some knowledge of mainstream mindfulness practice and the science underpinning mindfulness has informed this intervention, the knowledge and skills needed to facilitate Māori mindfulness interventions are primarily from a Māori worldview. Therefore, mainstream mindfulness training such as MBSR would not adequately prepare facilitators to teach Māori mindfulness within total immersion Māori settings. The next phase of this research would be to create a professional development curriculum to train facilitators in Māori mindfulness practice. The challenge will be finding appropriate people in Māori communities who have generic teaching or facilitation competencies, mātauranga Māori, te reo Māori and the time and resources to undertake such training.

Further studies assessing and reporting on rangatahi long-term adherence to mindfulness practice post-intervention is also warranted. Furthermore, the sustainability of this Māori mindfulness intervention and its positive impact will only be realised fully when wider systemic issues such as racism, poverty and environmental crises affecting rangatahi wellbeing are simultaneously addressed.

Conclusion

The participative collaborative nature of the research has meant that the effects of the research have been valued by the participants, and these impacts have cascaded out to the wider wharekura and community. The Mahitahi co-design approach to this research validated Māori understandings and practices of mindfulness and recovered Indigenous wisdoms of mindfulness. Māori co-design research supports transformative outcomes that legitimise an Indigenous holistic approach to wellbeing. The result is a restoration of traditional cultural healing practices combined with innovative cultural healing practices that align to a Māori world that recognises, values, cares for and celebrates the many diverse manifestations of being a rangatahi in the world today.

Acknowledgements

This study was funded by the New Zealand Health Research Council under the Erihapeti Rehu-Murchie Research Fellowship in Māori Health. We also wish to acknowledge Te Wharekura o Mauao kaiako, whānau and rangatahi participants for their commitment to the research and their aroha for the kaupapa. Ethical approval for this study was obtained from the University of Waikato Human Research Ethics Committee.

Glossary

aroha	kindness, affection, love, compassion
atua	god
haerenga	trip, journey
he āhuru mōwai	safe haven, calm space
hinengaro	psychological, thoughts/emotions
Hine-nui-te-pō	Goddess of the underworld
hohou te rongo	cultivating peace, meditations
hui	meeting
iwi	tribe
kai	food
kaiako	teacher
kaitiaki Māori	performing arts guardiankapahaka
karakia	prayer, incantation
kaupapa	topic
Kaupapa Māori	theory based on Māori epistemology
kirihaehae	to lacerate the skin
koroua	grandfather
koru	spiral motif
kotahitanga	unity
kuia	grandmother
mahi	work, practices
mahi a ngā tīpuna	practices and beliefs of ancestors
Mahia te mahi	Do the work
Mahitahi	a Māori co-design methodology
mahi toi	creative arts
mana	prestige, authority, power
manaakitanga	kindness, generosity, support
mangopare	hammerhead shark
matakite	prophet, visionary
Mataora	a rangatira who lived in te ao tūroa (the natural world)
mātauranga	knowledge, wisdom
mātauranga Māori	Māori knowledge
Mā te ringa raupā ka eke	By working hard at manual tasks, success will be achieved
Mauao	sacred ancestral mountain in Tauranga whose name means "caught by the dawn"
mauri	life principle, vital essence
moko	Māori tattooing designs
mōteatea	traditional chant
ngā hau o	the winds of Tāwhirimātea, the god of weather
ngā kaitiaki	the role of animals, ancestors and natural phenomena as guardians
ngā unaunahi Whakamautai	the big fish scale of Tangaroa Whakamautai (controller of tides)
nohopuku	fasting, inward reflection
pākati	carving pattern
pito	navel
puhoro	moko design representing principles of movement
pūrākau	ancient legend, myth, story
pūrerehua	butterfly
pūwewere	spider web
rangatahi	youth, adolescents
Rarohenga	the world of spirits and immaterial realm
taha hinengaro	emotional wellbeing
taha tinana	physical wellbeing
taha wairua	spiritual wellbeing
taha whānau	family wellbeing
tā moko	to tattoo, apply traditional tattoo; traditional tattooing
taumahatanga	difficulties, burdens
te ao Māori	the Māori world
te ao wairua	the spiritual world
Te Mātorohanga	Ngāti Kahungunu tohunga—tribal expert and historian
te reo Māori	the Māori language
te taiao	the natural environment
Te Wharekura o Mauao	total immersion Māori secondary school in Tauranga, New Zealand
tinana	body, physical
tīpuna	ancestors
tipuna maunga	ancestral mountain
tīwaiwaka	fantail
tohu	symbol
toi	art
tuakana–teina	older sibling–younger sibling
waka	canoe
wairua	spirit, spiritual
wānanga	a learning forum
whai	stingray
whakairo	carving
whakapakari tinana	physical exercise
whakapapa	promote, support genealogywhakapiki
whakapurenga	ritual of purification, cleansing
whakataukī	proverb
whakawātea	clearing, freeing
whakawhiti kōrero	discussions

whānau	family
whanaungatanga	relationships, collectivity
wharekura	Māori language immersion secondary school

References

Bernay, R., Graham, E., Devcich, D. A., Rix, G., & Rubie-Davies, C. M. (2016). Pause, breathe, smile: A mixed-methods study of student well-being following participation in an eight-week, locally developed mindfulness program in three New Zealand schools. *Advances in School Mental Health Promotion*, *9*(2), 90–106. https://doi.org/gr29

Bishop, R. (1996). *Collaborative research stories: Whakawhanaungatanga*. Dunmore Press.

Bodhi, B. (2011). What does mindfulness really mean? A canonical perspective. *Contemporary Buddhism*, *12*(1), 19–39. https://doi.org/fftrsf

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/fswdcx

Chi, X., Bo, A., Liu, T., Zhang, P., & Chi, I. (2018). Effects of mindfulness-based stress reduction on depression in adolescents and young adults: A systematic review and meta-analysis. *Frontiers in Psychology*, *9*, Article 1034. https://doi.org/gds4st

Dam, R. F., & Siang, T. Y. (2020). *Personas*. Interaction Design Foundation. https://www.interaction-design.org/literature/article/personas-why-and-how-you-should-use-them

De Witte, M., Spruit, A., Van Hooren, S., Moonen, X., & Stams, G. (2020). Effects of music interventions on stress-related outcomes: A systematic review and two meta-analyses. *Health Psychology Review*, *14*(2), 294–324. https://doi.org/gf4hxt

Dreger, L. C., Mackenzie, C., & McLeod, B. (2015). Feasibility of a mindfulness-based intervention for Aboriginal adults with type 2 diabetes. *Mindfulness*, *6*, 264–280. https://doi.org/f65p95

Durie, M. (1999). Marae and implications for a modern Māori psychology. *Journal of the Polynesian Society*, *108*(4), 351–366.

Gallegos, A., Lytle, M., Moynihan, J., & Talbot, N. (2015). Mindfulness-based stress reduction to enhance psychological functioning and improve inflammatory biomarkers in trauma-exposed women: A pilot study. *Psychological Trauma: Theory, Research, Practice and Policy*, *7*(6), 525–532. https://doi.org/gr3b

Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits: A meta-analysis. *Journal of Psychosomatic Research*, *57*(1), 35–43. https://doi.org/djcjtv

Hanara, B., & Jackson, A. (2019). *Tangaroa ara rau: Tangaroa the atua of human movement* (Internship Report 18INT01). Ngā Pae o te Maramatanga. http://www.maramatanga.co.nz/sites/default/files/project-reports/NPM_ngaAkonga_HanaraJackson_18INT01%20%28003%29.pdf

Higgins, R. (2004). *He tānga ngutu, he Tūhoetanga te mana motuhake o te tā moko wāhine: The identity politics of moko kauae* [Doctoral thesis, University of Otago]. OUR Archive. http://hdl.handle.net/10523/157

Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 78(2), 169–183. https://doi.org/fnx5wt

Holzel, B., Carmody, J., Vangel, M., Congleton, C., Yerramsetti, S., Gard, T., & Lazar, S. (2011). Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Research: Neuroimaging*, *191*(1), 36–43. https://doi.org/fr4jrm

IDEO. (2015). *The field guide to human centred design*. https://www.ideo.com/post/design-kit

Jahnke, R. (2010). Ko Rūamoko e ngunguru nei: Reading between the lines. *Journal of the Polynesian Society*, *119*(2), 111–130.

Kabat-Zinn, J. (1996). Mindfulness meditation: What it is, what it isn't and its role in healthcare and medicine. In Y. Haruki, Y. Ishii, & M. Suzuki (Eds.), *Comparative and psychological study on meditation* (pp.161–169). Eburon.

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L., Walters, E. E., & Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalence and trends in non-specific psychological distress. *Psychological Medicine*, *32*(6), 959–976. https://doi.org/bt5xdw

Kessler, R. C., McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., Aguilar-Gaxiola, S., Alhamzawi, A. O., Alonso, J., Angermeyer, M., Benjet, C., Bromet, E., Chatterji, S., de Girolamo, G., Demyttenaere, K., Fayyad, J., Florescu, S., Gal, G., Gureje, O., . . . Williams, D. (2010). Childhood adversities and adult psychopathology in the WHO World Mental Health Surveys. *The British Journal of Psychiatry*, *197*(5), 378–385. https://doi.org/djdjn3

Kingi, T., Russell, L., & Ashby, W. (2017). Mā te mātau, ka ora: The use of traditional Indigenous knowledge to support contemporary rangatahi Māori who self-injure. *New Zealand Journal of Psychology*, *46*(3), 137–145.

Le, T., & Gobert, J. (2015). Translating and implementing a mindfulness-based youth suicide prevention intervention in a Native American community. *Journal of Child and Family Studies*, *24*(1), 12–23. https://doi.org/f6wg9k

Le, T. N., & Proulx, J. (2015). Feasibility of mindfulness-based interventions for incarcerated mixed-ethnic native Hawaiian/Pacific Islander youth. *Asian American Journal of Psychology*, *6*(2), 181–189. https://doi.org/gjz5v4

Le, T. N., & Shim, P. (2014). Mindfulness and the aloha response. *Journal of Indigneous Social Development*, *3*(1), 1–11.

Lee, J. (2005, 24 June). *Māori cultural regeneration: Pūrākau as pedagogy* [Paper presentation]. Centre for Research in Lifelong Learning International Conference, Stirling, Scotland. http://www.rangahau.co.nz/assets/lee_J/purakau%20as%20

pedagogy.pdf students' office discipline referrals. *RMLE Online*, *41*(3), 1–8. https://doi.org/gr3f

Martinez, T., & Zhao, Y. (2018). The impact of mindfulness training on middle grades students' office discipline referrals, *RMLE Online*, 41(3), 1–8. https://doi.org/gr3f

McDonald, M. (2016). *Manaaki Tāngata—The secret to happiness: Narratives from older Māori in the Bay of Plenty* [PhD thesis, University of Auckland]. ResearchSpace. http://hdl.handle.net/2292/31981

McKeering, P., & Hwang, Y. (2019). A systematic review of mindfulness-based school interventions with early adolescents. *Mindfulness*, *10*(4), 593–610. https://doi.org/gkzmp7

Mead, H. M. (2012). Understanding mātauranga Māori. In D. Bean, T. Black, W. Collings, & W. Nuku (Eds.), *Conversations on mātauranga Māori* (pp. 9–14). NZQA. https://www.nzqa.govt.nz/assets/Maori/Conversations-MMv6AW-web.pdf

Mental Health Foundation. (2011). *An overview of mindfulness-based interventions and their evidence base*. https://web.archive.org/web/20210304093528/https://mentalhealth.org.nz/assets/ResourceFinder/mindfulness-based-interventions-and-their-evidence-base.pdf

Neves-Pereira, M. S., De Carvalho, M. A. B., Aspesi, C. D., Wallace, B., & Shaughnessy, M. F. (2018). Mindfulness and Buddhism: Contributions of Buddhist philosophical and religious teachings to the fields of psychology and education. *Gifted Education International*, *34*(2), 144–154. https://doi.org/gr3g

O'Keeffe, G., & Clarke-Pearson, K. (2011). The impact of social media on children, adolescents, and families. *Pediatrics*, *127*(4), 800–804. https://doi.org/dvnkrm

Ortiz, R., & Sibinga, E. M. (2017). The role of mindfulness in reducing the adverse effects of childhood stress and trauma. *Children*, *4*(3), Article 16. https://doi.org/gr3hRewi, P. (2010). Karakia Māori: Māori invocations to spiritual authorities. *He Pūkenga Kōrero: A Journal of Māori Studies*, *9*(2), 15–20.

Rix, G., & Bernay, R. (2014). A study of the effects of mindfulness in five primary schools in New Zealand. N*ew Zealand Journal of Teachers' Work*, *11*(2), 201–220. https://doi.org/gr3j

Rolleston, A., Doughty, R., & Poppe, K. (2017). The effect of a 12-week exercise and lifestyle management programme on cardiac risk reduction: A pilot using a kaupapa Māori philosophy. *International Journal of Indigenous Health*, *12*(1), 116–130. https://doi.org/gr3k

Royal, C. (2002). *Indigenous worldviews: A comparative study: A report on research in progress*. Winston Churchill Memorial Trust.

Sapthiang, S., Van Gordon, W., & Shonin, E. (2019). Health school-based mindfulness interventions for improving mental health: A systematic review and thematic synthesis of qualitative studies. *Journal of Child and Family Studies*, 28, 2650–2658. https://doi.org/gr3m

Shapiro, S., Carlson, L., Astin, J., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology*, *62*(3), 373–386. https://doi.org/cnspsg

Simpson, J., & Mapel, T. (2011). An investigation into the health benefits of mindfulness-based stress reduction (MBSR) for people living with a range of chronic physical illnesses in New Zealand. *New Zealand Medical Journal*, *124*(1338), 68–75.

Sistig, B., Lambrecht, I., & Hatters Friedman, S. (2014). Journey back into body and soul: An exploration of mindful yoga with psychosis. *Psychosis*, 7(1), 25–36. https://doi.org/gr3n

Tawhai, W. (2013). *Living by the moon: Te maramataka a Te Whānau-ā-Apanui*. Huia Publishers.

Waitangi Tribunal. (1999). *The wananga capital establishment report* (WAI 718). https://forms.justice.govt.nz/search/Documents/WT/wt_DOC_68595986/Wai718.pdf

Whaanga, H., Waiti, J., Hudson, M., Williams, J., & Roa, T. (2017). *How institutions frame mātauranga* Māori (Report commissioned by Waikato Regional Council). University of Waikato. https://hdl.handle.net/10289/12192

Wirihana, R., & Smith, C. (2014). Historical trauma, healing and well-being in Māori communities. *MAI Journal*, *3*(3), 197–210.