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A quasi-experimental mixed methods study of self-esteem and sense of self in Peruvian primary school students who meditate

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ABSTRACT

Self-esteem and a strong sense of self are reliable predictors of health and longevity. Transcendental Meditation develops both self-esteem and an empowered sense of self. Our research program in Peru has focused on quantitative and qualitative variables in students, teachers, parents, orphans and carers, and other mostly indigenous people. However, it has yet to investigate self-esteem or sense of self. The present mixed methods study therefore explores the impact of Transcendental Meditation on self-esteem in primary school students in Peru. We found a significant difference between the pretest and posttest self-esteem scores of students who meditate. We also found the proportion of students rated as having 'high' self-esteem increased from 38% to 54% after three months of meditation practise, a 43% increase. The study concurrently elicited self-reported qualia and identified a range of benefits from meditation practice. These qualia were triangulated to examine the convergence of evidence, which suggests an impact on sense of self.

ARTICLE HISTORY

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KEYWORDS

Self-esteem; sense of self; school students; Transcendental Meditation; Peru

Introduction

We have been engaged in a six-year research programme to document the impact of Transcendental Meditation on the lives of thousands of primary and secondary school students, teachers, parents, educational administrators, orphans, carers, and other mostly indigenous people in Peru, many of whom live in high-altitude Andean communities. This atypical programme has included using the quantitative method to measure variables like physical, cognitive and emotional health (including anxiety, depression, stress, and personal wellbeing) and school performance, as well as using the qualitative method in proto-theories of stress and the stress response and in a learning history model to investigate the impact of meditation on pre-, peri- and post-pandemic individual and collective life (e.g. Fergusson et al., 2020, 2021b, 2022, 2023a, 2024a, 2025). However, the programme has yet to measure pre- and post-meditation self-esteem.

Self-esteem is one of the most intensively studied personality traits in the social sciences (Monteiro et al., 2022). Like wellbeing, self-esteem is important for its holistic dimensionality (i.e. as a synergistic and integrative measure of the whole person), and for its positive causal relationship to health, life satisfaction, quality-of-life, and longevity outcomes. Conversely, self-esteem is negatively related to depression, anxiety, and obesity (e.g. Ibrahim et al., 2022; Moradi et al., 2021).

The self-esteem construct is typically defined as a global scale of 'one's overall sense of worthiness as a person' (Schmitt & Allik, 2005, p. 623) and 'a person's positive or negative attitude toward the self in totality' (Wood et al., 2021, p. 1). The trait is a 'valuable personal asset [which] predicts better quality of life and personal empowerment' (Wood et al., 2021, p. 1). In young age, self-esteem (and self-perception more generally) is a reliable predictor of health, longevity, and life expectancy (e.g. Kamiyab & Arabhashemi, 2020; Levy et al., 2002). According to Orth et al. (2012, p. 1271), 'self-esteem is [therefore] best modelled as a cause rather than a consequence of life outcomes'.

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Of importance to this study, self-esteem is also a predictor of a sense of coherence, comprehensibility, and meaningfulness (Kupcewicz, 2022), and higher levels of self-esteem predict a healthier, more robust, and greatly empowered sense of self (Goldstein et al., 2024). Self-perception is also negatively associated with how we think others see us; in other words, having a ‘strong sense of self [is] positively associated with emotional intimacy’ (Price et al., 2024, p. 52). Orth and Robins (2022) have persuasively addressed lingering questions about the validity of self-esteem as a causal variable and its association to what they call ‘life domains’ (p. 2), such as mental and physical health, behaviour, relationships, school, and work.

Our application of Transcendental Meditation as a treatment variable arises from its history of predictable salutary outcomes, including its established impact on metabolic, biochemical, electrophysiological and electroencephalographic functioning, health, wellbeing, and quality-of-life changes, and behaviour and academic performance, all of which have been documented in more than 650 published studies by Dillbeck (2020).

Transcendental Meditation is practiced twice a day for 15–20 minutes (or 10–15 minutes for children and adolescents) and is described as a non-denominational, simple, effortless, and natural mental technique for systematically creating deep physiological rest, restful alertness, and inner calmness and peacefulness.

Early research showed the practice increased self-esteem in Dutch students (Vandenberg & Mulder, 1976) and more recent evidence indicates it also does so in young Ugandan women (Goldstein et al., 2024); Tanner et al. (2009, p. 575) found the practice is associated with a ‘heightened sense of self’, Goldstein et al. (2018) found it is associated with self-efficacy, and Turnbull and Norris (1982) observed it strengthened self-identity. However, while we have previously found qualitative evidence of increased self-esteem in Peruvian students (e.g. Fergusson et al., 2021a), its quantitative measurement is an unexamined part of our research programme, hence the need for this study.

Proto-theoretical framework

Figure 1 provides a working overview of the foundational principles and research findings underpinning the theory we wish to explore. In the context of Peruvian primary school education, we can reiterate that

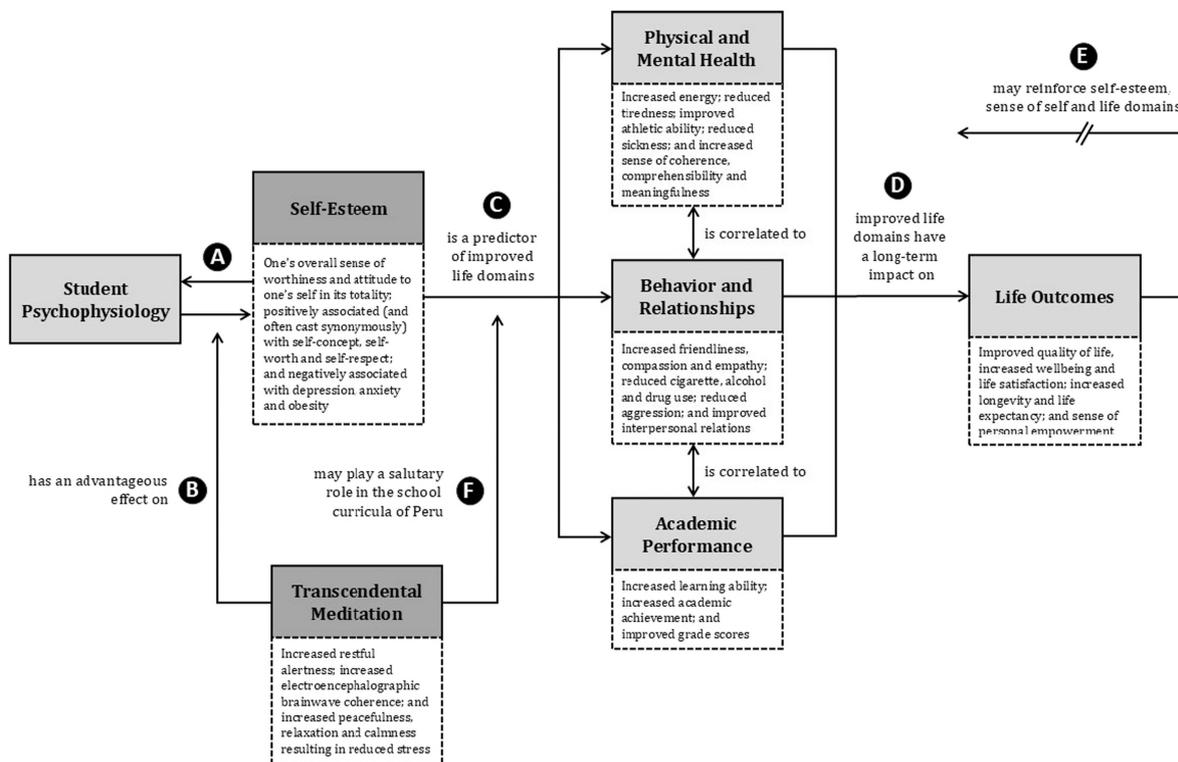


Figure 1. Proto-theoretical framework illustrating the possible influence of Transcendental Meditation on self-esteem, life domains and their long-term impact on life outcomes in Peru (source: research modelling).

well-established evidence shows a student's psycho-physiology is synergistically related to self-esteem [A]. Feedforward mechanisms mean improved health and psychophysiological stability and balance lead to greater self-esteem, and feedback mechanisms mean greater self-esteem (often synonymously called self-concept, self-worth and self-respect) lead to greater psychophysiological health.

For example, Martens et al. (2010) have shown positive feedback from self-esteem is associated with an influence on the parasympathetic nervous system, and Simion & Tomescu (2025, p. 83) found 'neurofeedback may contribute both to the reduction of anxious symptoms and to the optimisation of self-evaluative processes through neuropsychological mechanisms associated with self-regulation'. As noted above, extensive empirical evidence shows practise of Transcendental Meditation advantageously affects both psychophysiological health and self-esteem [B].

Figure 1 also indicates self-esteem is a reliable predictor of improved life domains, including greater physical and mental health, more constructive behaviour and interpersonal relations, and elevated academic performance [C], and these in turn feedforward to improved life outcomes, such as quality of life, wellbeing, longevity and life expectation (e.g. Sadjapong & Thongtip, 2023). Many of the causative associations between life domains and longer-term life outcomes are further considered in the Discussion section of this paper. For example, in a comprehensive meta-analysis of 2,000 studies involving 1.0 million people, Zell and Johansson (2025) recently found self-esteem has 'a robust overall association with health/well-being', irrespective of regional context, test instrument or research design.

Of most relevance is the contribution of life domains and self-esteem to an empowered or strengthened sense of self [D]. Indeed, self-esteem apparently directly enhances life satisfaction, according to Watson (2024). Figure 1 also graphically suggests that these affirmative life outcomes may reinforce self-esteem, sense of self and life outcomes, as suggested by countless studies (e.g. Martinsen et al., 2021), thus confirming the bidirectional, feedforward and feedback association of self-esteem and life outcomes [E]. Given self-esteem is a reliable predictor of life domains and longer-term life outcomes (rather than a mere common variable), then 'effective interventions that raise self-esteem in children, adolescents, and adults might increase their chances of success in important life domains such as relationships, school, and work' (Orth & Robins, 2022, p. 2). Taking our lead from this theoretical perspective, the present study asks: does the same advantage to self-esteem provided by Transcendental Meditation also apply when introducing it into Peruvian school curricula [F]?

To expand the variable range of our research programme in Peru and to include students from high-altitude Andean schools not previously investigated, we therefore ask the primary research question: RQ—Is there a difference between pretest and posttest self-esteem of Peruvian primary school students who practice Transcendental Meditation, and how do these students describe their experience of meditation? Answers to the following four sub-RQs will provide the detail necessary to answer RQ:

Sub-RQ1—Does school, age, or gender affect the result?

Sub-RQ2—Is there is a difference between posttest self-esteem scores of students who meditate at different schools?

Sub-RQ3—Is there is a difference between pretest and posttest scores of students who meditate and normative samples?

Sub-RQ4—Is there is difference between the percentage of meditating students at pretest and posttest and normative non-meditating samples who rate their self-esteem as 'high'?

Methodology

Participating schools and students

Three schools participated in this study: 1) Colegio Nacional General Ollanta; 2) Institución Educativa Privada Prescott; and 3) Institución Educativa Emblemática César Vallejo. A total of $N = 275$ students from these schools were purposively sampled to participate in the study. In each school, slightly more girls ($n = 151$ or 55%) participated than boys ($n = 124$ or 45%) but the age and distribution of students

across the three primary school grade levels were even. The gender and age distribution of students is presented in Table 1 and grade level distributions are presented in Table 2.

The first two schools are located in high-altitude Andean regional communities of mostly indigenous Aymara and Quechua students; the third is in a densely populated urban environment. In each school, Transcendental Meditation was incorporated into the curriculum and students practiced it together at the beginning of the day in their classroom.

School No. 1. One hundred and five primary students from Colegio Nacional General Ollanta participated in the study. Established in 1960, Colegio Nacional General Ollanta is a co-educational primary and secondary school in Cusco (population 428,500, elevation 3,400m). Approximately 650 students attend the school, with 200 students first instructed in Transcendental Meditation during 2024.

School No. 2. Thirty-seven primary students from Institución Educativa Privada Prescott participated in the study. I.E. Privada Prescott located in Puno (population 124,000, elevation 3,800m) is a private co-educational primary and secondary school established in 1992 to develop the values of honesty, work, social sensitivity, responsibility towards the community, and respect for the family, homeland and world. Approximately 300 students attend the school, with 2,500 students instructed in Transcendental Meditation since 1998.

School No. 3. One hundred and thirty-three primary students from Institución Educativa Emblematica César Vallejo participated in the study. I.E. Emblematica César Vallejo, a government-run public co-educational primary and secondary school, is located in the La Victoria district of central Lima (population 185,000 in La Victoria and 10 million in Lima, elevation 150m). La Victoria is one of the most densely populated areas of Lima. I.E. César Vallejo has an enrolment of 1,400 students across all primary and secondary grade levels. Transcendental Meditation was first introduced into the curriculum in 2014 with approximately 2,400 students instructed in the practice between 2014–2024.

Research design

This study used a concurrent quasi-experimental mixed methods design with a pretest-posttest quantitative stream and a parallel posttest-only qualitative stream to triangulate evidence to answer the primary RQ. Students from the three schools were designated: Group 1—Colegio Nacional General Ollanta; Group 2—I.E. Privada Prescott; and Group 3—I.E. Emblematica César Vallejo.

Students in Group 1 were administered the Children's Rosenberg Self-Esteem Scale (CRSES) in early September 2024 prior to beginning instruction in Transcendental Meditation (pretest); after three months of regular practice in their classrooms at the beginning of each school day, students were retested on the CRSES at the beginning of December 2024 (posttest). Students in Group 1 were also asked to reflect and

Table 1. Descriptive statistics by school, gender and age (source: field survey).

School	Gender		Total
	Girls	Boys	
1. Colegio Nacional General Ollanta	$n = 56$ (53%) $M = 10.8, SD = 0.97$	$n = 49$ (47%) $M = 10.7, SD = 1.04$	$n = 105$ (38%) $M = 10.7, SD = 1.0$
2. I.E. Privada Prescott	$n = 22$ (60%) $M = 11.0, SD = 1.0$	$n = 15$ (40%) $M = 10.5, SD = 0.91$	$n = 37$ (14%) $M = 10.7, SD = 0.96$
3. I.E. Emblematica César Vallejo	$n = 73$ (55%) $M = 10.9, SD = 0.83$	$n = 60$ (45%) $M = 10.8, SD = 0.91$	$n = 133$ (48%) $M = 10.8, SD = 0.87$
Total	$n = 151$ (55%) $M = 10.9, SD = 0.93$	$n = 124$ (45%) $M = 10.7, SD = 0.95$	$N = 275$ (100%) $M = 10.7, SD = 0.94$

Table 2. Descriptive statistics by grade level (source: field survey).

Grade level	4 th grade	5 th grade	6 th grade	Total
1. Colegio Nacional General Ollanta	$n = 29$ (27%) $M = 9.6, SD = 0.52$	$n = 31$ (30%) $M = 10.6, SD = 0.49$	$n = 45$ (43%) $M = 11.7, SD = 0.55$	$n = 105$
2. I.E. Privada Prescott	$n = 13$ (35%) $M = 9.8, SD = 0.57$	$n = 13$ (35%) $M = 10.5, SD = 0.48$	$n = 11$ (30%) $M = 12.0, SD = 0.56$	$n = 37$
3. I.E. Emblematica César Vallejo	$n = 41$ (31%) $M = 10.1, SD = 0.58$	$n = 51$ (38%) $M = 10.7, SD = 0.58$	$n = 41$ (31%) $M = 11.7, SD = 0.56$	$n = 133$
Total and Average	$n = 83$ (30%) $M = 9.8, SD = 0.56$	$n = 95$ (35%) $M = 10.6, SD = 0.52$	$n = 97$ (35%) $M = 11.8, SD = 0.56$	$N = 275$

write brief statements about their personal experience of practicing Transcendental Meditation in December 2024 and these posttest-only statements were analysed for their probative value vis-à-vis the quantitative CRSES results; note, students were not guided on what to say and their statements may or may not reflect the items of the CRSES.

Students in Group 2 and Group 3 were also instructed in Transcendental Meditation at the end of June 2024 and after five months of regular practice were administered the CRSES at the end of November 2024 (posttest). Groups 2 and 3 served as posttest-only comparison groups. Normative data from non-meditating Peruvian (two groups of $N=630$ and $N=931$), Chilean ($N=733$), and Brazilian ($N=1,209$) students will be used for comparative purposes.

Research instruments

The Rosenberg Self-Esteem Scale (RSES) is considered among the most reliable and well-established measures of self-esteem and has therefore been in use for 60 years (Rosenberg, 1965). According to Monteiro et al. (2022, p. 932), 'almost 50% of empirical studies on self-esteem published in major scientific journals used the RSES'. The RSES is a ten-statement quantitative instrument with a four-point Likert scale of five positive statements (Q1, Q3, Q4, Q7, and Q10) and five negative statements (Q2, Q5, Q6, Q8, and Q9). The instrument was first translated and validated in Spanish approximately 30 years ago (e.g. Echeburua, 1995). Table 3 presents the ten RSES statements in English and how they were used in translation for this study.

Statements are scored: 1 = Strongly disagree; 2 = Disagree; 3 = Agree; and 4 = Strongly agree. For children, resulting in the CRSES, these four standard responses were later modified by Wood et al. (2021) to better reflect a child's understanding of the statements, with their Spanish translation as applied in this study, to: 1 = It is definitely not true (Definitivamente no es cierto), 2 = Is not true (No es verdad); 3 = True (Verdadero/verdadero); and 4 = Very true (Muy cierta/Muy cierto). In all other ways the two instruments are identical. Positive statements are scored 1–4 and negative statements are reverse scored 4–1. The global measure of self-esteem is the sum of scores for the ten items (range 10–40); a higher RSES/CRSES score means greater self-esteem. Scores on the RSES/CRSES can also be ranked according to the following criteria: 'low' self-esteem = 10–25; 'moderate' self-esteem = 25–29; and 'high' self-esteem ≥ 30 (Zapata-Lamana et al., 2021).

A significant volume of both historical (e.g. Goldsmith, 1986) and contemporary research (e.g. Canqui et al., 2025), including a comparative study across 53 countries (Schmitt & Allik, 2005) and a meta-analysis of 34 studies with 140,671 participants (Gnambs et al., 2018), indicates the RSES/CRSES is stable and measures a single factor, although questions associated with method bias between positively and negatively worded statements persist (e.g. Wu et al., 2017).

Students in Group 1 were asked to write a brief and honest description of their experience of practising Transcendental Meditation in December 2024 ($N=63$: grade 4 $n=14$, grade 5 $n=26$, grade 6 $n=23$). These qualia were translated into English by the study's second author; students were not coached or led in how to respond and were not encouraged to specifically speak about self-esteem.

Table 3. Ten statements of the Rosenberg self-esteem scale (source: Rosenberg, 1965).

English statement	Spanish statement
S1. On the whole, I am satisfied with myself	S1. En general me siento contento/a conmigo mismo/a
S2. At times, I think I am no good at all	S2. A veces pienso que no soy bueno/a para nada
S3. I feel that I have a number of good qualities	S3. Creo que tengo buenas cualidades
S4. I am able to do things as well as most other people	S4. Soy capaz de hacer las cosas tan bien como la mayoría de las personas
S5. I feel I do not have much to be proud of	S5. Siento que no tengo muchas cosas de las cuales sentirme orgulloso/a
S6. I certainly feel useless at times	S6. A veces me siento inútil
S7. I feel that I'm a person of worth, at least on an equal plane with others	S7. Pienso que soy una persona tan valiosa como la mayoría de la gente
S8. I wish I could have more respect for myself	S8. Quisiera respetarme más a mí mismo/a
S9. All in all, I am inclined to feel that I am a failure	S9. Tiendo a pensar que soy un fracasado/a
S10. I take a positive attitude toward myself	S10. Tengo una visión positiva sobre mí mismo/a

Data analysis

To test the primary RQ and four sub-RQs, descriptives statistics, including for skewness, kurtosis, and reliability by Cronbach's Alpha (Ca), will be used to measure normal distribution and internal consistency followed by a dependent-paired sample t -test (t) for any pretest-posttest difference of Group 1 and analyses of variance and covariance (F) to test differences between groups and to control for any influences of school, age, and gender. Tukey's honestly significant differences ($HSD = Q$) will be calculated to determine post-hoc differences between individual groups. Single sample t -tests (t) will also be calculated to compare pretest and posttest results from the three groups of meditating students with normative Peruvian, Chilean and Brazilian samples.

Student self-reported qualia about practising Transcendental Meditation (with anonymised name, gender, age, and grade level) were coded and organised into themes following an analytic process encouraged by Braun et al. (2023) to ensure fit, design coherence and methodological integrity, thereby allowing triangulation of quantitative and qualitative data in relation to RQ. Figure 2 shows where within the research design data will be collected and analysed to test the RQ and sub-RQs. In all cases, quantitative analyses will be tested at the two-tailed, $\geq 95\%$ confidence level.

Ethics

This research was approved in May 2024 by the Research Ethics Approval Committee of Maharishi Vedic Research Institute (MVRI), in accordance with both MVRI's *Code of Research Practice and Procedure* and the *Australian Code for the Responsible Conduct of Research* and was conducted under approval number MVRI-2024-04. The project was countenanced in advance by administrators of each school and Instituto Maharishi de Ciencia y Tecnología del Perú. No payments of any kind were made to the authors, no

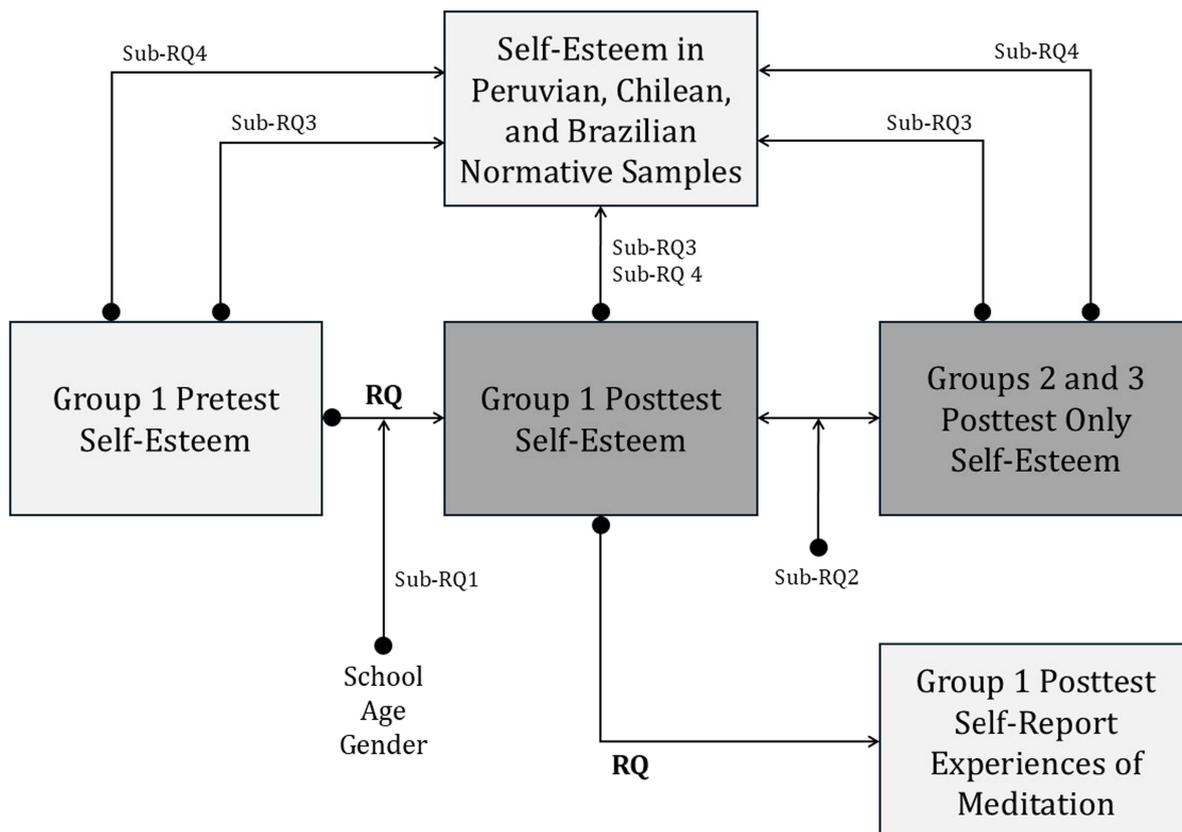


Figure 2. Points within the research design where data collection and analyses will be performed (source: research design model).

inducements were made to any party, and no fees were charged to schools or student participants to learn Transcendental Meditation.

Results

Quantitative results

Skewness ranged from $S_2 = 0.42$ to $S_5 = 0.89$, with only one statement greater than 1.0, $S_2 = 1.40$; kurtosis ranged from $S_5 = 0.55$ to $S_1 = 1.0$, with no statement greater than 1.0. Reliability was $Ca = 0.78$, a finding comparable to Bolívar-Suárez et al. (2022) reliability data on the RSES derived from 1,409 Colombian adolescents and young adults and was within the standard range of $Ca = 0.77$ – 0.88 (Sánchez-Rojas et al., 2022). Data were therefore considered normally distributed and internally consistent. Table 4 presents self-esteem results by Group.

As shown in Table 4, a modest but nevertheless statistically significant difference between the pretest and posttest self-esteem scores of students in Group 1 was observed, thereby answering the RQ affirmatively. Based on the covaried sub-RQ1 data shown in Table 5, it is evident that school, age, and gender were insignificant contributors to this outcome.

To answer sub-RQ2, analysis of variance indicated there was no difference in posttest self-esteem score between Groups 1, 2, and 3 ($F = 1.80$, $p = 0.17$). Post hoc tests indicated no difference between Group 1 and Group 2 ($Q = 0.94$, $p = 0.61$), Group 1 and Group 3 ($Q = 1.87$, $p = 0.14$), or Group 2 and Group 3 ($Q = 0.34$, $p = 0.94$). The inference being that 275 Peruvian students after learning Transcendental Meditation have statistically the same levels of self-esteem.

To answer sub-RQ3, single sample t -tests to compare pretest self-esteem of Group 1 prior to learning Transcendental Meditation to other students indicated there were no significant differences between students when using the data of Ventura-León et al. (2018) from 931 non-meditating Peruvian school children and adolescents ($M = 27.1$, $t = 1.75$; $p = 0.08$), Zapata-Lamana et al. (2021) from 733 non-meditating Chilean adolescents and young adults ($M = 28.8$, $t = 1.71$; $p = 0.90$), and Pereira da Silva et al. (2022) from 1,209 non-meditating Brazilian school children ($M = 27.0$, $t = 1.96$; $p = 0.05$) as normative. The inference from this finding is that 105 Peruvian students before learning Transcendental Meditation have statistically the same levels of self-esteem as 2,873 normative students.

Single sample t -tests to compare the posttest self-esteem scores of Groups 1, 2, and 3 three months after learning Transcendental Meditation to other students indicated there were significant differences between meditating and non-meditating students when using the data of Ventura-León et al. (2018) from non-meditating Peruvian school children and adolescents ($t = 10.11$; $p = 0.00001$), Zapata-Lamana et al. (2021)

Table 4. Self-esteem results by group and gender (source: field survey).

Group	Mean			SD	Skew	Kurt	t	p
	Girls	Boys	Total					
Group 1 (Pretest)	27.8	27.8	27.8	5.05	-0.26	-0.40	1.98	0.03
Group 1 (Posttest)	29.6	29.2	29.4	4.69	-0.21	0.16		
Group 2 (Posttest)	30.1	30.4	30.2	3.43	-0.18	0.11		See Figure 2
Group 3 (Posttest)	31.8	29.5	30.6	4.91	-0.73	0.26		
Average (Posttest)	30.5	29.7	30.1	4.34	-0.37	0.17	—	—

Table 5. Analysis of covariance for meditation, school, age, and gender effects (source: field survey).

Effect	SS	df	MS	F	P
Meditation effect	119	1	119	5.29	0.02
School effect	75	1	75	3.34	0.07
Residual	8509	377	22.6	—	—
Meditation effect	439	1	439	14.6	<0.001
Age effect	77.7	1	77.7	2.92	0.09
Residual	10527	377	26.7	—	—
Meditation effect	387	1	387	14.5	<0.001
Gender effect	63	1	63	2.36	0.13
Residual	10542	377	210	—	—

from non-meditating Chilean adolescents and young adults ($t = 4.49$; $p < 0.001$), and Pereira da Silva et al. (2022) from non-meditating Brazilian school children ($t = 10.89$; $p < 0.00001$) as normative.

When comparing all meditating students in Perú at posttest with all non-meditating students in Peru, Chile and Brazil, there is a significant difference in self-esteem ($p < 0.001$). The results of tests for the RQ and sub-RQs 2 and 3 are shown in Figure 3. The inference from these data is that 275 Peruvian students who practice Transcendental Meditation for three months have statistically higher levels of self-esteem than 2,873 normative students who do not.

The data necessary to answer sub-RQ4 related to whether there is a difference between the percentage of students at pretest and posttest who rate their self-esteem as 'high' when compared to normative non-meditating samples are provided in Table 6.

The proportion of high, moderate and low self-esteem in Group 1 students and the normative sample were largely the same. For Group 1 before learning Transcendental Meditation, high self-esteem was 38% compared to an average of 34% in the normative samples; moderate self-esteem was 32% compared to an average of 38% in the normative samples; and low self-esteem was 30% compared to an average of 28% in the normative samples. Thus, the proportion of high, moderate and low self-esteem scores was essentially the same for all non-meditating students.

However, the proportion of high self-esteem students in Group 1 increased from 38% (40/105) at pretest to 54% (56/105) at posttest, representing a 43% increase after they learned Transcendental Meditation (girls = 21% at pretest and 31% at posttest, boys = 17% at pretest and 23% at posttest) while the proportion of moderate and low self-esteem decreased. A greater increase in high self-esteem occurred with girls (50% increase) than boys (30%).

The proportion of high self-esteem was the same in Groups 2 and 3 but was in both cases 20% higher than Group 1 at posttest. Ratings of high self-esteem were predominant in all three Groups at posttest and were generally higher than normative data; i.e. an average 61% for this study compared to 23% in the Peruvian non-meditating normative sample of 630 observed by Agüero-Espinoza et al. (2024), 41% in the Chilean non-meditating normative sample of 733 observed by Zapata-Lamana et al. (2021), and 38% in the Brazilian non-meditating normative sample of 1,209 observed by Pereira da Silva et al. (2022). On average, the proportion of high self-esteem scores in Groups 1, 2, and 3 was 80% higher than the average of non-meditating norms.

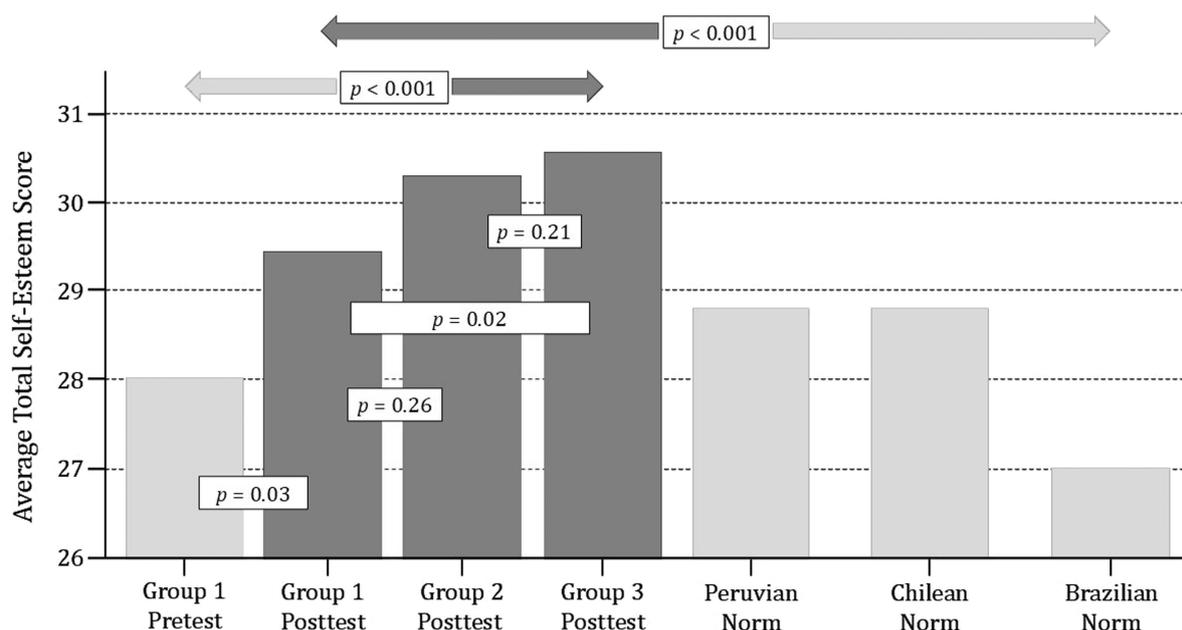
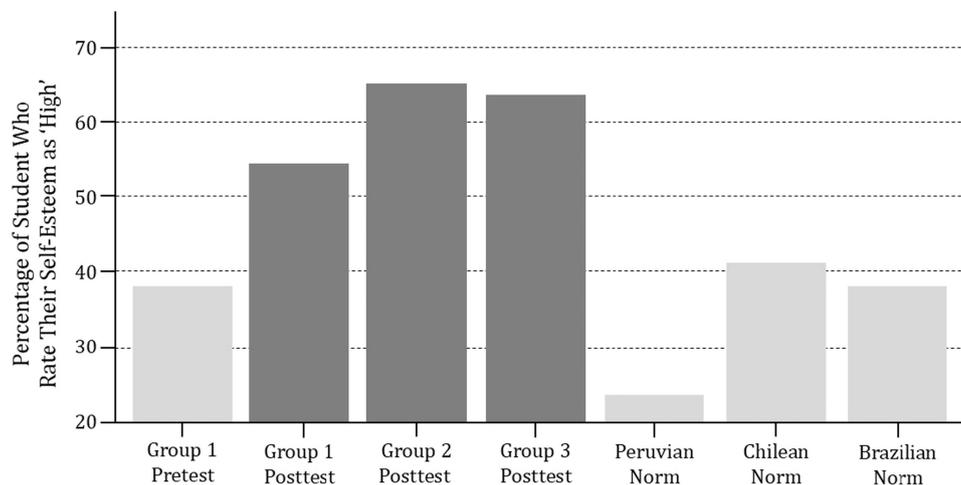


Figure 3. Average self-esteem scores and probabilities from tests of difference for Groups and non-meditating Peruvian, Chilean and Brazilian norms (source: field survey).

Table 6. Number and percentage of high, moderate, and low self-esteem scores by group followed by Peruvian, Chilean, and Brazilian non-meditating normative students (source: field survey).

Group	Girls	Boys	Total
Group 1: Colegio Nacional General Ollanta (Pretest)			
High self-esteem	22 (21%)	18 (17%)	40 (38%)
Moderate self-esteem	15 (15%)	18 (17%)	33 (32%)
Low self-esteem	19 (18%)	13 (12%)	32 (30%)
Total	56 (54%)	49 (46%)	105 (100%)
Group 1: Colegio Nacional General Ollanta (Posttest)			
High self-esteem	32 (31%)	24 (23%)	56 (54%)
Moderate self-esteem	9 (8%)	15 (15%)	24 (23%)
Low self-esteem	16 (15%)	9 (8%)	25 (23%)
Total	57 (54%)	48 (46%)	105 (100%)
Group 2: I.E. Privada Prescott (Posttest only)			
High self-esteem	10 (27%)	14 (38%)	24 (65%)
Moderate self-esteem	3 (8%)	8 (22%)	11 (30%)
Low self-esteem	2 (5%)	0 (0%)	2 (5%)
Total	15 (40%)	22 (60%)	37 (100%)
Group 3: I.E. Emblematica César Vallejo (Posttest only)			
High self-esteem	40 (30%)	43 (33%)	83 (63%)
Moderate self-esteem	19 (14%)	12 (9%)	31 (23%)
Low self-esteem	14 (11%)	5 (3%)	19 (14%)
Total	73 (55%)	60 (45%)	133 (100%)
Peruvian non-meditating normative students			
High self-esteem	-	-	143 (23%)
Moderate self-esteem	-	-	330 (52%)
Low self-esteem	-	-	157 (25%)
Total	-	-	630 (100%)
Chilean non-meditating normative students			
High self-esteem	164 (23%)	138 (19%)	302 (41%)
Moderate self-esteem	124 (18%)	116 (16%)	250 (34%)
Low self-esteem	97 (13%)	84 (11%)	181 (25%)
Total	385 (54%)	338 (46%)	733 (100%)
Brazilian non-meditating normative students			
High self-esteem	-	-	466 (38%)
Moderate self-esteem	-	-	343 (28%)
Low self-esteem	-	-	400 (33%)
Total	-	-	1,209 (100%)

**Figure 4.** Percentage of student who rated their self-esteem as 'high' for Groups and non-meditating Peruvian, Chilean and Brazilian norms (source: field survey).

The inference from these data, as shown in graphically [Figure 4](#), is the percentage of 105 Peruvian students who rate their self-esteem as 'high' prior to learning Transcendental Meditation is the same as 2,572 normative students, but after three to five months of meditation the percentage of 275 students who rate their self-esteem as 'high' increased and was substantially higher than normative students who do not meditate.

Qualitative results

Analysis of student self-reports identified a total of 126 individual topic codes (note, some topics were reported by more than one student, although no student referred to the same topic more than once). When clustered into preliminary themes, 45 topics were isolated from the codes. For example, the term 'relaxation' was reported by 23 students, increased 'friendliness' and greater care for 'family' were reported by 11 students, but increased 'energy' was only reported by four student and reduced 'anger' by only two.

Preliminary themes with the most codes were then grouped into nine main themes representing 106 of the initial codes. These themes, in order of frequency along with number of codes per topic and examples of qualia (i.e. self-reported experiences and subjective responses to meditation, with student acronym followed by gender, age and grade level), are shown in Table 7.

The nine themes can be further categorised into three general types: 1) standalone themes unique to the practice of Transcendental Meditation (themes 1, 4 and 5); 2) themes related to increased self-esteem (themes 3 and 8); and 3) themes indicative of a strengthening sense of self (themes 2, 3, 6, 7 and 9). Among the first type, theme 1 refers to feelings of relaxation during Transcendental Meditation and theme 4 suggests a sense of increased inner calmness and peacefulness during and after the practice. Experiences of

Table 7. Themes (with number of individual codes) and self-reported qualia related to experience of meditation (source: fieldwork).

Theme	Self-reported qualia
1—A feeling of relaxation during Transcendental Meditation (23 codes)	'I feel more relaxed ; through meditation I improved my goals'—RMO (boy, 10, grade 4) 'I feel very relaxed and very cheerful; I get along well with my family'—YCC (girl, 11, grade 5)
2—Increased happiness after meditating (18 codes)	'I like meditating because I have more energy, and I am happier '—KAQ (girl, 9, grade 4) '[I am] happy , relaxed, enthusiastic and focused'—NCS (girl, 11, grade 5)
3—General improvements, such increased patience and enthusiasm and decreased anger, aggression, boredom, insomnia, sadness, and stress (15 codes)	'I like meditating because I improve every day at home, at school, and everywhere'—ASM (girl, 10, grade 5) 'I feel relaxed. I feel less angry . I sleep better '—FV (boy, 10, grade 5) 'I like meditating because it has helped me stop lying and make friends'—JDSQ (boy, 11, grade 5) 'Somewhat happy, less stressed, less bored, less sad '—GCS (boy, 11, grade 5) 'Thanks to meditation, I have stopped being aggressive with everyone'—DPS (girl, 12, grade 6) 'I like meditating since I feel better about myself '—RCC (girl, 12, grade 6)
4—Increased calmness and peacefulness (12 codes)	'I like meditating because I feel tranquillity and peace '—DZH (girl, 9, grade 4) 'I like meditating because I feel calmer , more relaxed, and more peaceful '—PLU (girl, 10, grade 5)
5—Increased friendliness and sociability, including with family (11 codes)	'I feel more secure, patient, and calm '—AVD (girl, 11, grade 5) 'I like meditating because I have improved my behaviour and I have connected more with my family'—LA (boy, 10, grade 5) 'I am happier; I am friendlier . I like meditation; I have more peace'—AG (girl, 12, grade 5)
6—Increased concentration, creativity and intelligence (10 codes)	'I like meditating because there is silence and I can concentrate more'—FAC (boy, 11, grade 4) 'I like it because it gives [me] intelligence '—JFCF (boy, 10, grade 4) 'I like meditating because when I do, I feel more confident, relaxed, and creative . There is a saying: Time passes, but my intelligence endures'—JCM (boy, 10, grade 5)
7—Ability to regulate emotions (9 codes)	'I like meditating because when I meditate all the negative thoughts disappear'—LMCP (boy, 9, grade 4) 'Meditation relaxes me a lot, I get along better with my classmates and family, and I regulate my emotions '—LMEM (boy, 11, grade 6)
8—Increased confidence and contentedness (7 codes)	'It helped me a lot to be more sociable and less worried; I feel more confident '—JA (boy, 10, grade 4) 'I feel happy, content , and very loved'—AG (girl, 11, grade 5) 'I feel friendlier. I have gained more confidence . I manage my time [better]'—Y (girl, 11, grade 5)
9—Improved grades, learning, and studying (7 codes)	'I like meditating because my grades have improved , I am more attentive and happier, and I share moments with my family'—AVC (girl, 10, grade 5) 'I am more focused on my studies, and freer'—NSH (girl, 13, grade 6)

increased friendliness and improved social relations in theme 5 were also common and have been previously reported in relation to practice of Transcendental Meditation.

Of the second type, which clearly suggest improved self-esteem as a consequence of practicing Transcendental Meditation, theme 8 indicates a growing sense of self-confidence and inner contentment, along with parts of theme 3 in which several students reported feeling 'better' about themselves.

Of the third type, theme 7 refers to an increased ability to regulate emotions, emotions referred to in theme 3 as increased patience and enthusiasm and decreased anger, aggression, lying and sadness. Perhaps theme 6 related to increased ability to concentrate, theme 9 related to improved learning, and theme 2 related to feelings of increased happiness after meditation, equally qualify for this theme type.

Independently of self-esteem and sense of self, but of equal interest, are three outlier codes which did not qualify as themes (i.e. recurring patterns within the data). First, two male students suggested practicing Transcendental Meditation increased their ability to reason before making better decisions (e.g. 'I would like to share that meditation helped me make good decisions, to think and reason before doing something'—JYC, boy, 10, grade 4). These two observations seem remarkable for 10-year-old primary school students to make. Second, one student mentioned that Transcendental Meditation had helped 'me understand myself better' (EMP, girl, 12, grade 6), an observation slightly different to feeling 'better about myself' but nevertheless probably related to increased self-esteem and sense of self. ENP was also the only student of 63 in Group 1 who provided a counter-indicative view when she said: 'I feel relaxed, although sometimes I don't like it...but still it helps [me] with my family since I am always complaining'. Third, one student offered the surprising comment: 'I would like to share and teach others meditation so that they can follow the right path' (AAV, girl, 12, grade 6).

Taken together, these qualia suggest what theorists have called 'global self-esteem' or 'global self-worth' (e.g. Ibrahim et al., 2022; Kupcewicz, 2022), i.e. psychological constructs which encompass the broadest range and holistic nature of student experience.

Discussion

This study confirms there was a statistically significant increase between Group 1 pretest and posttest self-esteem scores of Peruvian primary school students at Colegio Nacional General Ollanta after practicing Transcendental Meditation for three months. The post-Transcendental Meditation self-esteem scores of students across three schools in Groups 1, 2, and 3 did not differ statistically, indicating the increase observed in Group 1 also occurred in Groups 2 and 3 but without pretest data this could not be confirmed. Moreover, irrespective of which school a student attended, neither school, age, or gender could statistically account for the observed differences between the pre- and post-meditation scores. Similarly, no statistical differences at posttest between high-altitude Andean students (Groups 1 and 2) and urban students in Lima (Group 3) were observed.

The study also established there was no difference between the self-esteem scores of students before they learned Transcendental Meditation and non-meditating Peruvian, Chilean, and Brazilian students treated as normative, but there was a significant difference between students after they practiced Transcendental Meditation and non-meditating students from elsewhere in Peru, Chile and Brazil who did not. Moreover, the percentage of Peruvian students who rated their self-esteem as 'high' increased after learning Transcendental Meditation, and the percentage of students with a rating of high self-esteem after learning to meditate in Groups 2 and 3 was noticeably greater than non-meditating norms.

These quantitative self-esteem findings are mirrored in, and logically consistent with, the qualitative posttest self-reports of students in Group 1. The concurrent self-reported experiences when organised into nine themes suggest a range of parallel benefits. These included themes specifically applicable to the practice of Transcendental Meditation, themes related to increased self-esteem, and themes indicative of a strengthening sense of self.

Of interest is the observation that all nine unsolicited themes have been the subject of previous research on Transcendental Meditation, and all are childhood predictors of long-term health and longevity in adult life (e.g. Kern et al., 2014). For example, related to theme 1 and consistent with the self-report of 23/63 students (37% of Group 1), in a controlled, randomised study conducted at Harvard University, Alexander et al. (1989) found an increase in feelings of relaxation after Transcendental Meditation. This empirical

finding is consistent with physiological measures from the 1970s which established the practice of Transcendental Meditation produces a deep state of physical restfulness (Wallace, 1970). Significantly, multiple studies have found relaxation and restfulness (i.e. as low arousal states) are reliable predictors of long-term health and longevity due to their association with stress reduction, improvements in immune function, and the regulation of biochemical actions linked to stress hormones (e.g. Epel et al., 2009). Alexander et al. (1989) also found evidence of 'feeling better' after Transcendental Meditation, consistent with theme 3.

Similarly, related to theme 2 (increased happiness, in which 18/63 students or 29% reported benefit) and theme 8 (increased confidence and contentedness, in which 7/63 students or 11% reported benefit), in a two-group, pretest–posttest design, Wendt et al. (2015) found school children reported improvements in happiness and self-confidence; the early work of Kniffki (1979) and the later work of Nader et al. (2023) also found evidence of increased self-confidence as a result of practicing Transcendental Meditation. Happiness is a reliable predictor of health and lifespan (e.g. Diener & Chan, 2011) and is directly associated with lower blood pressure, stronger immune function, and risk of death; self-confidence is associated with self-esteem and contentedness is associated with wellbeing, both of which are associated with mental and physical health and longevity in later life.

Related to theme 4 (12/63 students or 19% reported benefit of increased calmness and peacefulness), our earlier work during the COVID-19 pandemic found increased calmness in Peruvian students (Fergusson et al., 2023b), and Mason and Orme-Johnson (2010) found evidence of increased peaceful awareness during Transcendental Meditation. Calmness and a sense of inner peacefulness are strong predictors of health and moderate predictors of longevity, indicative of an increasing ability to cope with stress (e.g. Terracciano et al., 2008). Our prior research in Peru related to theme 7 (9/63 students or 14% reported improved ability to regulate emotions) also indicated students who practice Transcendental Meditation are better able to regulate their emotions and behaviour (Fergusson et al., 2024b). Emotional self-regulation is clearly associated with health and may be associated with longevity because those who can manage their emotions make healthier decisions and exhibit healthier behaviours (e.g. Crowell et al., 2015).

We therefore equate increased self-esteem (measured quantitatively) and self-reports of salutary experiences of practicing Transcendental Meditation with a growing sense of self and a strengthening and empowering self-identity (measured qualitatively); both quantitative and qualitative measures are likely predictors of health and long-life in adulthood, and hence why self-esteem can be viewed as a causative, rather than a consequential, indicator. These concurrent quantitative and qualitative results thus suggest a triangulation or convergence of measurable phenomena leading toward a greater sense of self. This convergence is schematically represented by Figure 5.

The usual design limitations of a quasi-experiment pertain to this study, although the concurrent mixed methods design has strengthened what could have been a more straightforward quantitative pretest–posttest study. Use of a reliable and valid measure of self-esteem is a positive, but the non-random selection of participating schools and students, and the non-random assignment of students to groups, are obvious weaknesses. That Groups 2 and 3 are comparison groups only and not proper control groups is equally limiting. Moreover, while the normative data provide valuable external comparisons, a future randomised controlled trial with a concurrent, non-meditating control will potentially strengthen this study's preliminary findings.

We also note that a potential compounding factor is the different durations of meditation practice at posttest of Group 1 (three months of meditation) and Groups 2 and 3 (five months of meditation). This difference of longer exposure to the effect of Transcendental Meditation may have advantageously influenced the findings for Groups 2 and 3, and data in Figure 3 apparently reflects this situation. However, even if Groups 2 and 3 were posttested after three months of meditation, their posttest scores would likely have been statistically higher than Group 1 at pretest and non-meditating normative data, although without a proper control group this conclusion can only be advanced cautiously.

Moreover, the normative data from Peru, Chile, and Brazil, while of significant importance because they provide regional context and comparison, may not be totally normative for our purposes, given some students were somewhat older than our three cohorts. Furthermore, where our Groups 1 and 2 were mostly composed of indigenous students, the normative data from Peru, some with students from Lima, was more reflective of our Group 3. While participant reactivity is unlikely to have occurred in the quantitative stream

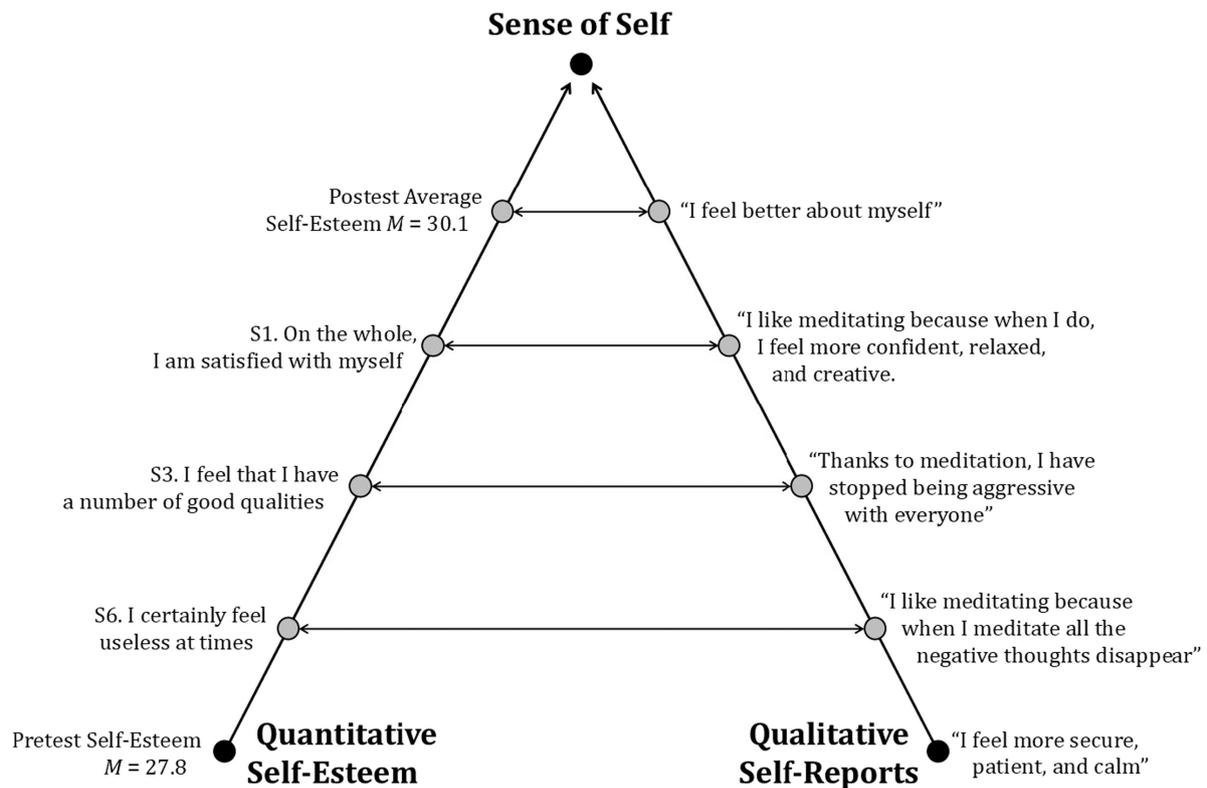


Figure 5. Triangulation of concurrent quantitative CRSES results (left) and qualitative results (right) leading to a greater sense of self for meditating primary school students (source: research design model).

it may have influenced the qualitative findings, with students potentially offering qualities they thought investigators might want to hear; random selection would have reduced that likelihood.

Conclusion

Nevertheless, the findings are encouraging. The apparent shift in percentage of students, from 38% to 54%, who rate their self-esteem as 'high' after learning Transcendental Meditation when compared to normative data are perhaps most noteworthy.

In some ways these results on Transcendental Meditation and its affirmative relationship to self-esteem simply confirm what has already been known since the 1970s. But in other ways they extend our understanding by including the Peruvian primary school and Andean contexts, both of which can be considered atypical of educational research on meditation, and in addition now triangulate standardised quantitative findings with unsolicited student self-reports. These additional qualia indicate that students not only report feeling relaxed and happy after practicing Transcendental Meditation in their classroom, some also report what can be described as having a greater sense of self associated with increased confidence, emotional self-regulation, contentedness, friendliness, and connectedness.

To paraphrase Orth et al.'s earlier suggestion, an effective intervention that can raise self-esteem in children and adolescents might thereby increase their chances of success in important life domains and outcomes. This nexus of self-esteem as a causal predictor of better life outcomes with developed empowerment that comes through a greater sense of self leads us to conclude when taken together these quantitative and qualitative findings suggest practice of Transcendental Meditation may be of fundamental value to the personal development of primary school children in Peru.

That self-esteem might also represent measurement of the 'whole person', the modest outcomes of this study could signal a strengthened self-identity, as previously observed by Turnbull and Norris (1982) in students in the UK. This notion of increased self-identity as it applies to indigenous communities is a crucial

matter in Peru and throughout Latin America (e.g. Rodríguez-Cáceres & Behrman, 2024), and its strengthening through the practise of Transcendental Meditation remains an important topic of future research.

However, we wish to be unequivocally clear: we only claim these findings suggest practise of Transcendental Meditation salutarly affected self-esteem and a sense of self in these Peruvian primary school students; we do not claim, despite similar outcomes in educational settings such as the Netherlands and Uganda, that the same or similar effects would necessarily be observed in other educational settings. We therefore do not argue for universal applicability or that practise of Transcendental Meditation is non-culturally specific.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Author contributions

Lee Fergusson: Conceptualisation; methodology; data curation; formal analysis and application of statistical techniques; validation; visualisation; writing—original draft. Javier Ortiz Cabrejos: Conceptualisation; investigation; project administration; resources; visualisation; writing—reviewing and editing. Anna Bonshek: Conceptualisation; visualisation; writing—reviewing and editing. Funding acquisition: No funding was acquired, and no software was developed, for this research project.

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