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- Well-being and Indigenous Aymara Orphans in Perú: 4
An Empirical Study at Hogar de Niñas Virgen de
Fatima de Chejoña, Puno
*Lee Fergusson, Javier Ortiz Cabrejos, Anna Bonshek,
and Aparna Datey*
- Which Side (of the Balance Sheet) Are You on? 30
Household Financial Resources and Participation in
the 2020 Protests
*Selina Miller, Stephen Roll, C. Taylor Brown,
Laura Brugger, and Michal Grinstein-Weiss*
- Can Workers and Their Families 90
Live on a Living Wage?
*Sandra Wexler, Soobin Kim, Rafael J. Engel,
Jihee Woo, and Jeff Shook*
- The Role of Hope in the Lives of Sexual and 116
Gender Minority Youth: The Relationship
Between Bullying and Life Satisfaction
*Jedediah E. Bragg, Daniel Howell,
and Shane R. Brady*
- Corresponding Authors 144

Well-being and Indigenous Aymara Orphans in Perú: An Empirical Study at Hogar de Niñas Virgen de Fatima de Chejoña, Puno

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The COVID-19 pandemic has resulted in a wide spectrum of well-documented adverse mental health outcomes for children and adults, including depression, anxiety, post-traumatic stress disorder (PTSD), self-harm, suicide, and other detrimental impacts to the well-being of young people. These impacts have extended to Perú where 216,000 people in a population of 33 million died from the disease, despite that country being the first to fully lockdown in Latin America. It is predicted that about 200,000 children will become orphans or lose their guardians as a consequence of this unprecedented surge in mortality. Compelling and sustained international research since the 1970s suggests Transcendental Meditation generates salutary effects to physical and mental health and behavior and social relations, and a multi-school, multi-context, pre- and peri-pandemic research program has shown it may do the same in Perú. To test that

proposition for well-being, the present study using the Personal Wellbeing Index (PWI) measured the impact of Transcendental Meditation on 49 Aymara orphan adolescent girls in a remote Andean residential care community. Results suggest that three months of meditation practice increased well-being from 42.8% to 55.1% ($F = 11.08, p = .03$), a statistically significant change when compared to two comparison groups from the same orphanage. While PWI post-test scores in the meditation group were lower than those observed for other girls in residential care in Perú and normative samples from Chile, Brazil, and Spain, the trend toward increased well-being is encouraging.

Keywords: Perú, indigenous orphans, Aymara, Transcendental Meditation, well-being

The COVID-19 pandemic and has been called a “global psychological pandemic” by Thakur and Jain (2020) because compelling evidence linking COVID-19 to multifarious short- and likely long-term adverse effects on mental health and well-being go beyond the acute respiratory distress syndrome (ARDS) and interstitial pneumonitis commonly associated with the disease.

Such detrimental mental and physical effects have been observed in children and adults living in Perú. Despite calling the first state of emergency and national lockdown in Latin America, Perú experienced the world’s highest mortality rate per head of population, with 216,000 COVID-19-related deaths in a population of less than 33 million. Schwalb and Seas (2021) therefore asked: what went wrong in Perú? This unprecedented rate of mortality can best be understood in the context of Perú having the lowest per capita income, highest poverty rates, and the least functional healthcare system of any country in Latin America (Ruiz-Frutos et al., 2021). Cruz et al. (2023) concluded that Perú will have a significantly increased mental health burden as a result of the COVID-19 pandemic.

Findings from Perú and elsewhere related to the specific mental health adversities of COVID-19 include compelling evidence for increased levels of depression, loneliness, anxiety, post-traumatic stress disorder (PTSD), self-harm, suicide, and other inimical psychological outcomes (Caballero-Peralta et al., 2022; Cullen et al., 2020; Fhon et al., 2022; Kumar & Nayar, 2020). For example, in 562 Peruvian students with an average age of 14.4 years, the majority of whom

were girls (88.3%) in their fifth year of secondary school (35.4%), Fernandez-Canani et al. (2022) found 75.8% reported recently having a family member with COVID-19, 48.6% having a deceased relative due to COVID-19, and 18.0% having sought mental health support. Seventy six percent of these respondents worryingly also reported having mild to severe depression, 62.2% having mild to severe anxiety, 42.5% having trauma, and 60.3% having PTSD.

Fernandez-Canani et al. (2022) have confirmed that a higher proportion of PTSD was observed in Peruvian schoolchildren with moderate to severe depression compared to those without depression (92.3% vs. 18.8%; $p < .001$), and students with severe anxiety had a 69.4% higher frequency of PTSD compared to those who were not anxious (98.5% vs. 29.1%; $p < .001$). These detrimental mental health impacts of COVID-19 may also extend to educational underachievement and reduced cognitive and emotional health (e.g., Kruglanski et al., 2021; Orgilés et al., 2021). Given that half of all mental health disorders begin emerging by the age of 14 years, “early recognition and treatment of the potential impacts of the COVID-19 pandemic will help protect children’s and adolescents’ current and future mental health, development, learning, and well-being” (Rider et al., 2021, p. 1).

Of greater relevance to our study are findings published in *The Lancet* which suggest the pandemic in Perú will cause 92,000 children to be orphaned and 98,000 to lose primary care due to the death of parents, guardians, or caregivers (Hillis et al., 2021), one of the world’s worst rate of children being orphaned or bereft of caregivers due to COVID-19. While the long-term impact of the pandemic on orphanhood in Perú has yet to be determined, to date little research on the post-pandemic mental health and well-being of orphans, specifically indigenous orphans in remote parts of Perú, has been forthcoming nor have specific ways to increase well-being been undertaken. The present study seeks to begin redressing this deficiency.

Well-being and COVID-19

According to Kentor and Thompson (2021, p. 366), a “large portion of the scientific and media attention has focused on COVID-19-related mortality of adults, with less focus on the bereaved children these deceased adults have left behind.” For that reason, Kentor and

Thompson have begun the process of understanding the impact of COVID-19 on orphans, highlighting the need to “moderate the risk of maladaptive child grief reactions and subsequent behavioural, mental, and physical health sequelae” (2021, p. 366). Kentor and Thompson propose expanded support services for orphans which are “likely to be most feasible and effective when approached and offered in collaboration with schools, churches, community health workers, and international advocacy groups and non-governmental organisations” (2021, p. 367). Against this backdrop of “grief reactions” and “behavioural, mental, and physical health sequelae,” we consider the implementation of Transcendental Meditation in orphanages as a possible support technique for improving childhood and adolescent coping mechanisms.

Arising from the aspiration of positive psychology to identify strategies adopted by “healthy” and “stable” individuals who appear to “flourish” (Rudaz et al., 2022), “well-being,” as a measurable psychological dimension, has come to generally mean those aspects of a healthy life that individuals hold to be in their self-interest. These aspects of life typically include having positive emotions or experiences of pleasure, joy and love, being engaged in activities which one finds absorbing, having experiences of positive relations with others, having a sense of belonging, including serving something that one believes to greater than oneself such as a social or environmental cause which fosters greater meaning and purpose in life, and having a sense of accomplishment or engagement with something that motivates one to achieve, or at least aspire to achieve, a positive outcome.

However, the meaning and operationalization of well-being as a measurable dimension, a concept closely aligned to both “resilience” and “quality of life,” are contested (Williams-Brown & Mander, 2020). Indeed, Linton et al. (2016, p. 10) have identified 196 dimensions of well-being and contend “there is little consistent agreement on how well-being should be measured, how instruments should be designed or which dimensions should be included.” Moreover, there have been critiques of the well-being construct, particularly in relation to its emphasis on the individual having to take responsibility for their own quality of life, because it echoes the worldview of neo-liberalism, a view critically examined by Coffey (2022). One specific criticism is that

in encouraging children to develop “resilience”...may have a detrimental effect on those whose lowered well-being is a result of their family experiencing structural inequalities that adversely influence their family lives, rather than the child’s inherent lack of personal resilience. However, despite such limitations, [well-being] is useful as a framework by which to analyse the children’s experiences during the pandemic. (Buchanan, 2020, p. 2)

Notwithstanding these criticisms, we have determined well-being might be a valuable psychological dimension of orphanhood to investigate in Perú for several reasons: 1) it has been measured before in relation to meditation; 2) it has been used in other settings with children and orphans in Perú and elsewhere in the world; 3) instruments measuring well-being have been developed and these, over time, have proven analytically and statistically robust; and 4) the sub-domains of well-being, such as positive emotions of love and a sense of safety and security, seem especially relevant for orphans in a post-COVID-19 Perú.

Transcendental Meditation and Well-being

Although mindfulness has come to dominate the global “meditation” landscape, the Transcendental Meditation technique has several distinct and unique characteristics which have made it a worthy candidate for experimentation since the 1970s. First, it is always taught systematically and in the same way, making results, predictions, and generalizations more defensible (van Assche, 2019). Second, it comes from a time-tested tradition, the Vedic tradition of ancient India, and is thus not a recent contrivance (Bhattacharya & Gaur, 2023; Walton et al., 2004). Third, the volume and quality of research on it is far more extensive and robust than mindfulness research, now exceeding 600 peer-reviewed published studies covering such topics as physiology, neurophysiology and electroencephalography, biochemistry, psychology, and sociology being most dominant (Dillbeck et al., 2020). Fourth, it is easy for children to practice and has been implemented extensively in schools, including in the European Union and elsewhere (e.g., Herani et al., 2015; van Assche, 2019). And fifth, there is ample evidentiary support to conclude it is a reliable, repeatable, and sustainable way to develop

psychological health in general and well-being in particular (e.g., Bhattacharya & Gaur, 2023; Nestor et al., 2023; Wendt et al., 2015).

Of importance for our study are findings associated with Transcendental Meditation and well-being. Bhattacharya and Gaur (2023) maintain it is possible through Transcendental Meditation to

live a life that is holistically nourished on all levels. It is this “Vedic” vision that may promote well-being on all levels in the changing times [due to the COVID-19 pandemic] and open our awareness to a better and a healthier world in future. (p. 9)

Empirical support for such a proposition can be seen in the results of Wendt et al.’s (2015) earlier study, which examined the impact of Transcendental Meditation on well-being in 9th-grade secondary students. In one school, 141 students who learned Transcendental Meditation (treatment group) were matched to 53 students (comparison group) in another who did not. Results indicate that students who learned Transcendental Meditation scored significantly lower on anxiety ($p < .05$) and higher on resilience ($p < .05$) after seven months than students in the comparison group. Within the treatment group, students who meditated more regularly had higher resilience scores. After seven months of Transcendental Meditation practice, students reported improvements in their sleep, happiness, and self-confidence.

Nestor, Lawson and Fischer’s (2023) recent work investigated the impact of Transcendental Meditation on 65 frontline health workers at three hospitals during the pandemic (treatment group) who were matched to 65 health workers in the same hospitals but not taught the practice (comparison group). These two groups were tested for psychological distress, insomnia, well-being, and burnout at baseline and then again after two weeks, one month, and three months. According to Nestor et al., after two weeks, symptoms of psychological distress, depression, and anxiety in the treatment group had reduced by 45%, while insomnia, emotional exhaustion, and well-being had improved by 33%, 16%, and 11% respectively ($p = 0.02$ for psychological distress and $<.001$ for all other variables); no significant change on any variable was noted in the comparison group. At three months, the improvement in symptoms for the treatment group showed reductions of 62% in anxiety, 58% in

psychological distress, 50% in depression, 44% in insomnia, 40% in emotional exhaustion 40%, and an 18% improvement of well-being ($p < .004$ for all variables). These findings suggest the practice may be beneficial to post-pandemic affected orphans in Perú.

Research Objectives and Hypotheses

The present study contributes to a multi-school, multi-context, pre-, peri-, and post-pandemic research program in Perú conducted by these authors. The program explores the role of Transcendental Meditation in the lives of mostly Aymara and Quechua indigenous children, adolescents, and adults and is unique in several ways: it is the first published research, in a corpus of more than 600 published studies, to examine the effects of Transcendental Meditation in Latin America; it is the first to study these effects in populations who typically live at altitudes exceeding 4,000m; it is the first to study these effects in indigenous peoples, such as the Aymara and Quechua; and it is the first to investigate effects of group meditation before and during COVID-19 home isolation.

The research program by Fergusson, Ortiz Cabrejos and Bonshak now includes: A) pre-pandemic qualitative and quantitative findings associated with a remote school at an altitude of 4,590 (Fergusson et al., 2021b), a larger-scale confirmatory study of children in four distinct and disparate school settings in Perú (Fergusson et al., 2022a), opinions and perspectives of parents and teachers of children who practice Transcendental Meditation (Fergusson et al., 2021a), and long-term effects on practitioners of the practice (Fergusson et al., 2020); and B) peri-pandemic findings associated with health and school performance during home isolation (Fergusson et al., 2022b) and a proto-theoretical model of stress, the stress response, and psychosocial measures of cognitive, affective and conative outcomes (Fergusson et al., 2023).

The purpose of this research is to consider if practice of Transcendental Meditation improves the post-pandemic well-being of orphans in Perú. We thus posit the following three hypotheses: H_1 —Based on an extensive body of prior published literature related to mental and physical health and improved quality of life through Transcendental Meditation in children and adolescents, its practice by indigenous orphans in a remote region of Perú will result in increased well-being;

H₂—As observed elsewhere, increased well-being will not be associated with age or grade level; and H₃—The dimensions of subjective well-being, identified in the literature to include physical health and satisfaction with personal circumstances, will be reliable predictors of well-being in Peruvian orphans.

Methodology

Research Context

This study was carried out at Hogar de Niñas Virgen de Fatima de Chejoña (HNVFC), an all-girls residential care facility located about 30 km southeast of Puno's central district and two kilometers from the eastern bank of Lake Titicaca at an altitude of 3,800m, high on Perú's Altiplano. Serving the needs of girls between the ages of eight and 18 years, HNVFC is one of three orphanages in Puno, one of 35 administered by Programa Integral Nacional para el Bienestar Familiar (INABIF), the Peruvian government's national program for family welfare, and one of 240 residential care facilities for children and adolescents in Perú (Ortúzar et al., 2021). The girls being cared for at HNVFC are Aymara. However, it is not within the scope of this paper to describe the unique language and cultural characteristics of the Aymara, a pre-Incan peoples living in the Puno area of Southern Perú for more than 5,000 years, but detailed accounts of Aymara civilisation and Aymaran language can be found in de Munter (2022), Emlen (2017), and Mamani-Bernabé (2015).

Research Design

The use of observational research in healthcare is considered important because it builds the knowledge and evidentiary base necessary for understanding phenomena and identifying best practices. Observational research in real-world, practice-based settings, as opposed to clinical settings (e.g., Tai et al., 2021), is to be encouraged, although not especially common. However, evidence is emerging of its applicability to educational research (e.g., Keele et al., 2021). According to Song and Chung (2010), well-designed observational studies have provided results similar to those derived from randomized controlled trials (RTC) and are often used

as precursors to them. They can also fill “gaps of evidence when RTCs are infeasible” (Lutters & Broekman, 2019, p. 117).

A prospective, longitudinal, observational study of three cohorts was used for this study. In a cohort study of this type, an expected outcome is identified by an exposure or event of interest (in this case, the introduction of Transcendental Meditation to girls at HNVFC) and followed in time until an outcome occurs (in this case, on a measure of well-being). Because exposure is identified before outcome in what are called “observational treatment comparisons” (Lutters & Broekman, 2019), empirical cohort studies use a temporal framework to assess causality and thus have the potential to provide defensibly strong evidence (Song & Chung, 2010).

Three groups make up this study: Group 1, a pre-test only (unexposed) comparison group; Group 2, the intervention group who will learn Transcendental Meditation and be tested both before (unexposed) and after (exposed) they adopt the practice; and Group 3, a post-test only (exposed) comparison group. This design allows for statistical comparisons between Groups 1 and 2 and between Groups 2 and 3, with Groups 1 and 3 serving as cohort comparisons. Pre-testing occurred at the beginning of September 2022 and post-testing occurred at the beginning of December 2022.

Participants

Participants in the study were 49 volunteer Aymara girls ($M = 14.4$ years, $SD = 1.0$) in five secondary school grades: Grade 1 ($n = 1$, $M = 13.0$ years); Grade 2 ($n = 9$, $M = 13.4$ years, $SD = 0.49$); Grade 3 ($n = 16$, $M = 14.4$ years, $SD = 0.42$); Grade 4 ($n = 10$, $M = 15.1$ years, $SD = 0.84$); and Grade 5 ($n = 13$, $M = 16.0$ years, $SD = 0.79$). The average age of girls in this study was identical to the age of girls reported by Fernandez-Canani et al. (2022) in their investigation of COVID-19 and mental health symptomatology in Perú. The 49 girls were divided into three groups of similar ages:

Group 1—Pre-test only comparison group ($n = 15$, $M = 15.0$, $SD = 0.52$), composed of Grade 2 ($n = 1$, $M = 14.0$); Grade 3 ($n = 5$, $M = 14.6$); Grade 4 ($n = 2$, $M = 15.0$); and Grade 5 ($n = 7$, $M = 16.7$);

Group 2—Pre-test and post-test intervention group ($n = 26$, $M = 14.6$, $SD = 1.3$), composed of Grade 1 ($n = 1$, $M = 13.0$); Grade 2 ($n = 7$, $M = 13.3$); Grade 3 ($n = 9$, $M = 14.6$); Grade 4 ($n = 6$, $M = 15.8$); and Grade 5 ($n = 3$, $M = 16.0$); and

Group 3—Post-test only comparison group ($n = 8$, $M = 14.6$, $SD = 1.0$), composed of Grade 2 ($n = 1$, $M = 13.0$); Grade 3 ($n = 2$, $M = 14.0$); Grade 4 ($n = 2$, $M = 14.5$); and Grade 5 ($n = 3$, $M = 15.7$).

Instrument

The Personal Wellbeing Index (PWI) was used to measure subjective well-being, following guidelines outlined by the instrument's developer for administration to children (Cummins, 2005). Other researchers of children and adolescents in Perú have adopted this instrument (e.g., Bullock et al., 2021; Oriol et al., 2020), and Linton et al. (2016) have analyzed the PWI in relation to 99 other well-being test instruments. Different versions of the PWI have been cited in the literature, with seven-, eight-, and nine-question versions most common (e.g., Bullock et al, 2021; Casas et al. 2012; Tomy & Cummins, 2011). However, each version uses an 11-point Likert scale, from '0' (completely dissatisfied) to '10' (completely satisfied) with '5' labeled neutral. For the present study, we used the following seven PWI questions (also referred to in the literature as "domains" or "variables"):

Q1—How satisfied are you with your standard of living?

(¿Qué tan satisfecho estás con tu vida?)

Q2—How satisfied are you with your health?

(¿Qué tan satisfecho estás con tu salud?)

Q3—How satisfied are you with your personal relationships?

(¿Qué tan satisfecho estás con tus relaciones personales?)

Q4—How satisfied are you with how safe you feel?

(¿Qué tan satisfecho estás con tu seguridad?)

Q5—How satisfied are you with feeling part of your community?

(¿Qué tan satisfecho estás con tu sentimiento de formar parte de una comunidad?)

Q6—How satisfied are you with your future security?

(¿Cómo te sientes con respecto a tu seguridad futura?)
Q7—How satisfied are you with your spirituality or religion?
(¿Qué tan satisfecho estás con tu espiritualidad o religión?)

Each question was scored out of 10 and then converted by multiplying $\times 10$ (i.e., performing scale maximum conversion [%_{SM}] of all domains) to give a final score for each domain and an overall average well-being score out of 100, with higher scores reflecting higher levels of well-being. The PWI was translated into Spanish by Pérez-Belmonte et al. (2021) and this served as the basis for our own with young girls in Perú.

According to Bullock et al. (2021, p. 4), for “unique populations such as Indigenous youth in Peru, it may be helpful to consider SWB [i.e., subjective well-being] in a quality-of-life framework that considers satisfaction with important well-being factors such as health and security, not just general satisfaction,” thereby providing further evidence of the suitability of the PWI in this context. It was Sarriera et al. (2014) who recommended the question “How satisfied are you with your spirituality or religion?” be added to the PWI, since “it is considered an important factor for neighboring South American populations” (Bullock et al., 2021, p. 5). This conclusion is reinforced by Bullock et al.’s (2021) finding that of 172 primary and secondary students in Perú, including 66% who identified as “indigenous,” 80% reported practicing a “religion.”

Scores on the PWI are known to be stable over time (Tomyn & Cummins, 2011) and its reliability and validity have been established over nearly two decades of research. For example, using principal component analysis (PCA) the overall PWI scores of a large sample of children aged between 12 and 16 years in Chile, Brazil and Spain ($N = 5,328$) show the seven domains load to one component, explaining 45.8% of variance (Casas et al., 2012, p. 467). It has also been established that these seven domains are related to global life satisfaction (GLS) in “Western” and “non-Western” cultures, including Australia, China, Algeria, and Spain (Tomyn et al., 2013; Pérez-Belmonte et al., 2021) and Bullock et al. (2021) found scores on the PWI related to social engagement and cultural citizenship.

Data Analysis

In addition to recording standard descriptive data for each domain, including tests of normality (i.e., skewness, and kurtosis) and tests of reliability (i.e., Cronbach Alpha [α] and Composite Reliability Index), to answer H_1 and H_2 , tests of difference between Group 1 and Group 2 before instruction in Transcendental Meditation (independent means), between Group 2 before and after instruction in Transcendental Meditation (dependent means), and Group 2 and Group 3 after instruction in Transcendental Meditation (independent means) will be conducted using analysis of variance [F], followed by Tukey's *post hoc* honestly significant differences (HSD) [Q] and Cohen's [d] effect sizes. To answer H_3 , Pearson product moment correlation coefficients [r] will be calculated. All measures will be tested at the two-tailed, 95% confidence level, despite H_1 and H_2 being one-tailed assertions.

Ethics Approval

This project was approved in March 2022 by the Research Ethics Approval Committee (REAC) of Maharishi Vedic Research Institute (MVRI) in Australia (no. MVRI-2022-025), in accordance with MVRI's *Code of Research Practice and Procedure*, and was conducted under the strictest terms of research integrity. The MVRI Code conforms to both the *Australian Code for the Responsible Conduct of Research* and the *National Statement on Ethical Conduct in Human Research*. The project was sanctioned in advance by INABIF administrators of Hogar de Niñas Virgen de Fatima de Chejoña and by Instituto Maharishi de Ciencia y Tecnología del Perú; all participants (or their guardians) provided prior informed consent.

Results

A test of normality confirmed data were normally distributed with measures of skewness [average = -0.85] and kurtosis [average = -0.35] at pre-test. This finding is important due to both analyses of variance and correlational analysis requiring normally distributed sample data.

Table 1: Descriptive data for domains on the PWI by group.

Descriptive Data by Group				
Domain	Group	<i>M</i>	<i>SD</i>	<i>SE</i>
Q1—How satisfied are you with your standard of living?	1, pre-test	47.3	24.6	6.36
	2, pre-test	40.4	30.5	5.99
	2, post-test	58.1	27.7	5.44
	3, post-test	56.3	20.0	7.00
Q2—How satisfied are you with your health?	1, pre-test	52.0	24.0	6.19
	2, pre-test	45.0	33.0	6.28
	2, post-test	66.9	28.7	5.62
	3, post-test	50.0	35.5	12.54
Q3—How satisfied are you with your personal relationships?	1, pre-test	48.0	29.6	7.63
	2, pre-test	48.1	26.4	5.17
	2, post-test	62.3	28.5	5.58
	3, post-test	48.8	38.0	13.42
Q4—How satisfied are you with how safe you feel?	1, pre-test	44.0	27.5	7.09
	2, pre-test	40.8	27.8	5.46
	2, post-test	66.9	33.6	6.58
	3, post-test	62.5	38.5	13.59
Q5—How satisfied are you with feeling part of your community?	1, pre-test	36.0	25.9	6.68
	2, pre-test	49.6	26.8	5.25
	2, post-test	57.7	28.0	5.50
	3, post-test	52.5	32.8	11.61
Q6—How satisfied are you with your future security?	1, pre-test	56.0	29.7	7.67
	2, pre-test	57.7	30.5	5.98
	2, post-test	75.8	24.8	4.87
	3, post-test	65.0	32.5	11.50
Q7—How satisfied are you with your spirituality or religion?	1, pre-test	67.3	30.6	7.90
	2, pre-test	54.6	34.0	6.66
	2, post-test	59.2	35.5	6.97
	3, post-test	71.3	34.4	12.17
Average Personal Wellbeing Index	1, pre-test	50.0	27.4	7.07
	2, pre-test	48.0	29.8	5.82
	2, post-test	63.8	29.5	5.79
	3, post-test	58.0	33.1	11.69

Internal consistency was rated as “excellent” when measured by Cronbach Alpha [$\alpha = 0.83$], a finding similar to earlier studies (e.g., Pérez-Belmonte et al., 2021), and a Composite Reliability Index [CRI = 1.03] for all domains at pre-test, a finding consistent with children and adolescents using the PWI in other settings (e.g., Tomy & Cummins, 2011).

Table 1 presents the mean (*M*), standard deviation (*SD*), and standard error (*SE*) for all three groups on each of the seven domains and the overall average well-being score. Scores at pre-test were somewhat uniform. For example, at pre-test Group 1 and

Group 2 scored Q6—"How satisfied are you with your future security?" at 56.0% and 57.7% satisfied, respectively. A similar observation can be made for scores at post-test. For example, at post-test Group 2 and Group 3 rated Q4 "How satisfied are you with how safe you feel?" at 66.9% and 62.5% satisfied, respectively.

However, a clear distinction in most domain scores between Group 1 and Group 2 at pre-test and between Group 2 and Group 3 at post-test can be observed. For example, on Q4 "How satisfied are you with how safe you feel?," before learning the practice of Transcendental Meditation girls on average reported they felt 42.4% satisfied but after three months of practice they felt 64.7% satisfied, and Q5 "How satisfied are you with feeling part of your community?" girls on average reported they felt 42.8% satisfied but after three months of practice felt 55.1% satisfied. For other questions, these average differences were: Q1—43.8% versus 57.2%; Q2—48.5% versus 58.4%; Q3—48.0% versus 55.5%; Q6—56.8% versus 70.4%; Q7—60.9% versus 65.2%, for an average 49.0% versus 60.9%.

Analysis of variance for independent means found average well-being scores for Group 1 were not significantly different from Group 2 at pre-test ($F = 0.97, p = .75$) and Group 2 at post-test were not significantly different from Group 3 ($F = 0.45, p = .50$). However, using repeated measures, average scores for Group 2 at pre-test were significantly different from Group 2 at post-test ($F = 11.08, p = .03$). While the effect size between pre- and post-test Q4 was "large" ($d = .85$), the average effect size between Group 2 pre-test and post-test was "medium" ($d = .53$). These findings are schematically shown in Figure 1.

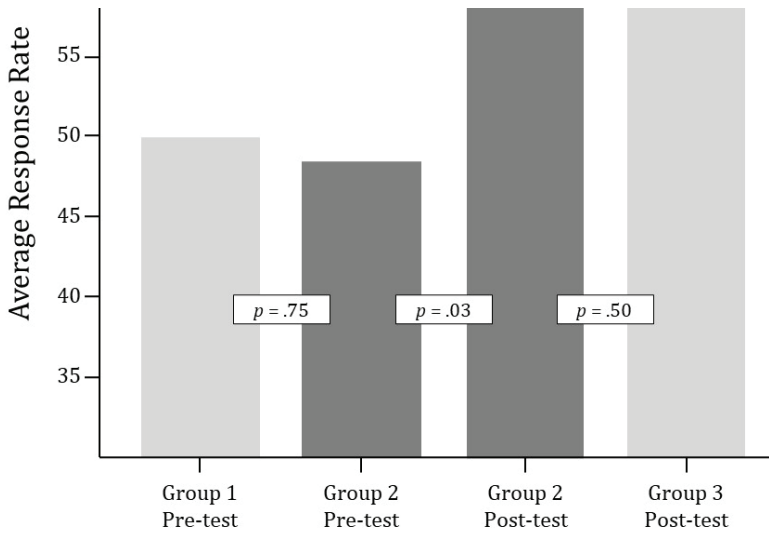


Figure 1: Analysis of variance results for means of the PWI by group.

Examples of *post-hoc* findings for individual domains found example scores for Q2 in Group 1 were not significantly different from Group 2 pre-test ($Q = 0.70, p = .88$) and Group 2 post-test were not significantly different from Group 3 ($Q = 1.69, p = .50$). However, Q2 scores in Group 2 pre-test were significantly different from Group 2 post-test ($Q = 2.19, p = .04$). Scores of Q4 in Group 1 were similarly not significantly different from Group 2 pre-test ($Q = 0.32, p = .98$) and Group 2 post-test were not significantly different from Group 3 ($Q = 0.44, p = .98$). However, Q4 scores in Group 2 pre-test were significantly different from Group 2 post-test ($Q = 2.62, p = .01$).

Furthermore, because age and grade levels are potential covariables, ANCOVAs on changed average PWI scores between pre- and post-Group 2 were calculated. Because age and grade level in this sample essentially follow each other, grade level will be tested as the surrogate covariate for these two demographic variables. Probability values for between-group differences in change from baseline, based upon repeated measures covarying for grade level, showed significance for six domains (but not Q7) and average total scores at three months, which is consistent when not covarying for grade level. These results can be seen in Table 2.

Table 2: Results for pre- and post-Group 2 ANCOVAs using grade level as the covariate.

Analyses of Covariance x Grade Level		
Domain	F-value	p-value
Q1—How satisfied are you with your standard of living?	7.10	.01
Q2—How satisfied are you with your health?	5.52	.02
Q3—How satisfied are you with your personal relationships?	4.02	.04
Q4—How satisfied are you with how safe you feel?	12.33	<.001
Q5—How satisfied are you with feeling part of your community?	4.22	.04
Q6—How satisfied are you with your future security?	6.12	.01
Q7—How satisfied are you with your spirituality or religion?	0.32	.57
Average Personal Wellbeing Index	9.86	.002

Moreover, except for domain Q7 ($F = 0.17, p = .67$), all pre-test scores (Group 1 and Group 2 pre-test) were statistically different to all post-test scores (Group 2 post-test and Group 3), with F -values ranging between Q3 ($F = 3.87, p = .05$) and Q4 ($F = 12.73, p < .0001$); the average effect size between all pre- and all post-test scores was a “medium” $d = 0.51$. These results can be seen in Table 3.

Table 3: Descriptive data and tests of difference for domains on the PWI by all pre-test and all post-test scores.

All Pre- and All Post-Test Descriptive Data and Analyses of Variance			
Domain	All Pre-Test <i>M (SD)</i>	All Post-Test <i>M (SD)</i>	<i>F</i>-value (<i>p</i>-value)
Q1 —How satisfied are you with your standard of living?	43.2 (28.6)	59.3 (24.1)	6.60 (.01)
Q2 —How satisfied are you with your health?	47.2 (29.5)	64.2 (30.2)	5.86 (.01)
Q3 —How satisfied are you with your personal relationships?	47.7 (27.5)	60.9 (29.5)	3.87 (.05)
Q4 —How satisfied are you with how safe you feel?	43.0 (26.9)	67.8 (32.6)	12.7 (.0006)
Q5 —How satisfied are you with feeling part of your community?	45.0 (27.1)	58.1 (27.4)	4.21 (.04)
Q6 —How satisfied are you with feeling part of your community?	56.2 (29.7)	72.4 (26.6)	5.85 (.01)
Q7 —How satisfied are you with your spirituality or religion?	60.0 (33.0)	63.3 (34.8)	0.17 (.67)
Average Personal Wellbeing Index	48.9 (28.9)	63.8 (29.3)	9.62 (.002)

Of interest to these results is our earlier research which found that the regularity with which children practice Transcendental Meditation is associated, albeit weakly but significantly, with physical health ($r = 0.27, p < .05$), cognitive health ($r = 0.35, p < .05$), emotional health ($r = 0.26, p < .05$), and school performance ($r = 0.30, p < .05$) (Fergusson et al., 2022a). Further research is required to verify this phenomenon in orphans, but it does reflect the earlier findings on regularity of practicing Transcendental Meditation and well-being observed by Wendt et al. (2015).

Table 4: Descriptive data and MANOVA results for domains by grade level.

Descriptive Data and Analysis of Variance Data by Grade Level				
Domain	Grade	Pre-Test <i>M</i> (<i>SD</i>)	Post-Test <i>M</i> (<i>SD</i>)	<i>F</i> -value (<i>p</i> -value)
Q1—How satisfied are you with your standard of living?	2	45.0 (32.1)	50.0 (30.2)	0.25 (.77)
	3	45.0 (28.2)	49.1 (12.2)	0.44 (.32)
	4	33.8 (29.7)	73.8 (21.3)	3.09 (.003)
	5	47.0 (28.7)	71.7 (24.8)	3.31 (.002)
Q2—How satisfied are you with your health?	2	60.0 (35.9)	67.5 (32.0)	0.45 (.66)
	3	42.9 (25.5)	62.7 (26.5)	1.89 (.03)
	4	41.3 (31.8)	80.0 (20.0)	2.91 (.005)
	5	48.0 (29.0)	41.7 (37.6)	0.37 (.35)
Q3—How satisfied are you with your personal relationships?	2	48.8 (27.5)	57.5 (32.0)	0.45 (.66)
	3	40.0 (33.5)	54.5 (28.1)	1.15 (.12)
	4	56.3 (19.2)	80.0 (23.3)	2.22 (.02)
	5	51.0 (24.7)	51.7 (31.9)	0.04 (.48)
Q4—How satisfied are you with how safe you feel?	2	45.0 (32.1)	63.8 (36.6)	1.08 (.14)
	3	44.3 (30.3)	67.3 (30.7)	1.87 (.03)
	4	43.8 (27.2)	86.3 (16.0)	3.80 (.0009)
	5	39.0 (20.2)	50.0 (42.0)	0.71 (.24)
Q5—How satisfied are you with feeling part of your community?	2	52.5 (21.2)	55.0 (30.7)	0.18 (.42)
	3	40.7 (32.5)	49.1 (24.3)	0.42 (.33)
	4	48.8 (31.8)	72.5 (16.7)	1.86 (.04)
	5	42.0 (21.0)	60.0 (37.5)	1.24 (.11)
Q6—How satisfied are you with your future security?	2	60.0 (27.8)	72.5 (24.9)	0.94 (.17)
	3	47.9 (32.9)	61.8 (26.8)	0.10 (.45)
	4	58.8 (32.3)	86.3 (16.0)	2.16 (.02)
	5	63.0 (26.3)	73.3 (36.7)	0.65 (.26)
Q7—How satisfied are you with your spirituality or religion?	2	62.5 (28.7)	65.0 (29.3)	0.17 (.43)
	3	50.7 (35.4)	39.1 (3.7)	0.79 (.21)
	4	56.3 (37.4)	72.5 (29.6)	0.96 (.17)
	5	74.0 (28.8)	93.3 (10.3)	1.56 (.06)
Average Personal Wellbeing Index	2	53.4 (165.0)	61.6 (176.0)	0.67 (.25)
	3	44.4 (154.0)	54.8 (91.9)	1.37 (.09)
	4	48.4 (153.0)	78.7 (97.8)	3.31 (.002)
	5	52.0 (110.0)	63.1 (168.0)	1.12 (.13)

When tested for difference on the basis of grade, multivariate analysis of variance (MANOVA) indicated there was a difference between the scores of Grades 2, 3, and 4 ($F = 3.92, p = .03$). Such difference existed between Grades 2 and 3 which mostly went down with grade level, and between Grades 3 and 4 which mostly went up with grade level; other differences between grade levels were insignificant, as shown in Table 4. Note, Grade 1 ($n = 1$) was withheld from this analysis.

Correlational analysis on pre- and post-test data for all groups found: Q1 was correlated with Q2 ($r = 0.49, p < .001$), Q4 ($r = 0.43, p = .005$), Q5 ($r = 0.32, p = .03$), and Q7 ($r = 0.47, p = .002$); Q2 was correlated with Q3 ($r = 0.44, p = .004$), Q4 ($r = 0.44, p = .004$), Q5 ($r = 0.38, p = .01$), Q6 ($r = 0.46, p = .002$), and Q7 ($r = 0.48, p = .001$); Q3 was correlated with Q4 ($r = 0.51, p < .001$), Q5 ($r = 0.60, p < .001$), and Q7 ($r = 0.43, p = .005$); Q4 was correlated with Q5 ($r = 0.43, p = .004$), and Q7 ($r = 0.45, p = .003$); Q5 was correlated with Q7 ($r = 0.36, p = .01$); and Q6 was correlated with Q7 ($r = 0.51, p < .001$).

Despite the strength of most correlations being moderate, these collective findings suggest the seven domains of the PWI are related to each other and to well-being as whole (average $r = 0.70, p < .001$). Moreover, neither age nor grade level were correlated with any domain or with well-being as a whole (age: $r = 0.01, p = \text{NS}$; grade level: $r = 0.03, p = \text{NS}$), that is: higher age and grade levels were not reliable predictors of more well-being.

Q6 was the least reliable predictor of all domains and of well-being as a whole. This finding perhaps should not be unexpected given PWI's authors state that Q6 (How satisfied are you with your future security?) "taps subjective wellbeing...of 'community-connectedness'" but when "compared with the other items of the PWI, this item carries high abstractness and complexity which has required more rigor and trials of many different question formats to identify the optimal substitute, which will be easily understood by the less cognitively competent groups" (Cummins, 2005, p. 7).

Discussion and Conclusion

These preliminary findings support the proposition that practice of Transcendental Meditation increased well-being at HNVFC, thereby supporting H_1 . The change in satisfaction with feelings of safety (Q4—How satisfied are you with how safe you feel?) for Group 2 was the most significant (48.0% satisfaction before Transcendental Meditation and 63.8% after; $F = 3.04, p < .01; d = 0.85$). This finding was reflected in both the tests of difference between average PWI for Group 2 at pre-test and post-test (49.0% before and 60.9% after; $F = 11.08, p = 0.03; d = .53$), and between all average pre-test scores (Group 1 and Group 2) and all average post-test scores

(Group 2 and Group 3) (42.4% before and 64.7% after; $F = 12.7$, $p < .0006$; $d = 0.82$).

While the average post-test well-being score of 60.9% observed in this study was noticeably lower than scores reported by Oriol et al. (2020) for girls in residential care in Perú (77.8%) and the scores of Bullock et al. (2021) for adolescents in the Amazon (77.7%), the trend is upward after three months of practicing Transcendental Meditation. The present findings are also lower than those found by Casas et al. (2012) for well-being in Chilean, Brazilian, and Spanish children (average 80.4%), although their data are more skewed and kurtic than the data of this study (but their internal consistency and correlations are similar).

A score of around 75.0% on the PWI is roughly the international benchmark. For example, the normative range for “Western” countries has been reported between 70.0% and 80.0%. This range is generally “around 10 percentage points lower for Asian populations” due to a supposed “cultural response bias,” e.g., for Chinese respondents (Lau et al., 2005), potentially putting it closer to the post-test results reported in this study.

The findings associated with H_2 uphold the proposition that age and grade level cannot reasonably explain the change in well-being observed in Group 2. The findings associated with H_3 also support the proposition that the seven domains on the PWI load appropriately to the overall well-being construct and are mostly consistent with international literature on well-being.

Most of the psychometric studies conducted on the PWI involve large sample sizes. Reliable conclusions from the present study are necessarily restricted due to the size of its sample. The study is similarly restricted due to voluntary participation and to the non-random assignment of girls to each group. Results suggest an RTC might yield valuable insights, as the present findings cannot be generalised to the wider orphan population in Perú and might not represent the national profile. Kentor and Thompson (2021) have pointed out it is vital to draw awareness to the various ways in which children are affected by the pandemic—including the psychosocial burdens of unexpected parental or caregiver loss and the resultant secondary adversities (e.g., poverty, abuse, and institutionalisation). Given the risks for poor outcomes among parentally bereaved children, governmental and organisational responses

across the globe should direct efforts to the identification and support of this vulnerable population of young people.

We agree, and one of the main findings of this study is that it likely measures to some degree the psychosocial burdens of such unexpected loss, thus answering H_3 in the affirmative. However, it does not measure the secondary adversities of poverty, abuse or institutionalization and should only be seen in the context of its exploratory scope. A future case study of Hogar de Niñas Virgen de Fatima de Chejoña is being completed which is designed to triangulate these well-being findings with measures of physical health, cognitive health, emotional health, school performance, depression, anxiety and stress using vernacular and standardized test instruments and semi-structured interviews of both girls and carers.

Nevertheless, the present findings are promising. Further research is required to examine how these changes in well-being are operationalized by children for greater long-term satisfaction in life, but the study goes some of the way to offering a sustainable solution to supporting this vulnerable group.

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