Health of Indigenous Orphans and Carers in Perú: A Mixed Methods Case Study of Hogar de Niñas Virgen de Fatima

Lee Fergusson  
*University of Southern Queensland, Australia, l.fergusson@usq.edu.au*

Javier Ortiz Cabrejos  
ortizcabrejosj@gmail.com

Anna Bonshek  
anna@maharishivedicresearch.org

Aparna Datey  
*University of Queensland, a.datey@uq.edu.au*

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Mental Health of Indigenous Orphans and Carers: A Mixed Methods Case Study of Residential Care in Perú

Lee Fergusson a, Javier Ortiz Cabrejos b, Anna Bonshek c, Aparna Datey d

a School of Education, University of Southern Queensland; Professor of Vedic Science, Education, and the Environment, Maharishi Vedic Research Institute, Australia
b Director, Instituto Maharishi de Ciencia y Tecnología del Perú, Perú; Professor of Maharishi Vedic Science Research, Maharishi Vedic Research Institute, Australia
c Professor of Art and Vedic Science, Maharishi Vedic Research Institute, Australia
d School of Architecture, University of Queensland; Research Fellow, Maharishi Vedic Research Institute, Australia

Abstract

The COVID-19 pandemic dealt a devastating blow to the social fabric of Perú, with the highest orphans per death (OPD) ratio of any country in Latin America. Therefore, 260,000 orphans now require care because of 216,000 parent, custodial grandparent, and caregiver deaths between 2020 and 2022. The purpose of this research is to examine whether the practice of Transcendental Meditation, an established technique for improving the mental and physical health of children, can reasonably be expected to alleviate the symptoms of trauma associated with this surge in orphanhood.

Adolescent indigenous female orphans and their carers at Hogar de Niñas Virgen de Fatima de Chejoña, a residential care shelter near Puno in the country’s southeast, participated voluntarily in this mixed methods case study. Following a Type-2 case study structure, the research design details the context, case, embedded units of analysis, and methodological approaches used to measure them.

Three research modules were designed to explore: 1) orphan and carer health, personal relations, behavior, sense of safety and security, and view of the future; 2) health and school performance of orphans; and 3) depression, anxiety, and stress of both orphans and carers. The mixed methods approach used to gather and interrogate data derived from these orphans and carers before and after instruction in Transcendental Meditation included: structured interviews to determine the direction before and after change (qualitative module one); a vernacular paper-and-pencil test...
to measure physical, cognitive, and emotional health and school performance after instruction (quantitative module two); and a standardized test instrument to measure depression, anxiety, and stress in orphans and carers after instruction (quantitative module three).

Findings include self-report changes in orphans from feelings of fear, nervousness, and hopelessness to feelings of greater confidence, assurance, and a sense of achievement (module one); a significant difference between the number of orphans who reported improvements in health and school performance and those who did not receive Transcendental Meditation (module two); and higher levels of depression, anxiety, and stress in orphans than other comparative girls (module three). Despite limited carer data, the diverse sources of evidence for orphans, when considered in combination, suggest Transcendental Meditation may have salutarily improved both the present and future lives of girls in Perú.

This study forms part of a multi-school, multi-context, pre-, peri-, and post-pandemic research program conducted in Perú over the last four years. The program explores the role of Transcendental Meditation in the lives of mostly Aymara and Quechua indigenous children and adults and is unique in several ways. It provides the first published research, in an international corpus of more than 650 published studies, that empirically examines the effects of Transcendental Meditation in Latin America. It is also the first to study these effects in populations who typically live at altitudes exceeding 3,800m, and is among the first to study these effects in indigenous people. And finally, it is the first to investigate the effects of group meditation before and during home isolation. The present study is further distinguished in this program by contributing preliminary data related to the mental and physical health of orphan girls and their carers after the pandemic.

Early in the pandemic, Hillis et al. (2021) estimated 190,000 Peruvian children and adolescents would become orphans due to parental, custodial grandparent, or caregiver death. It was subsequently calculated that Perú had the highest orphans per death (OPD) ratio of any country in the Americas at 1.2 OPD (Lowe et al., 2022). Based on 216,000 COVID-19 mortalities by September 2022—the highest number of deaths per 100,000 population in the world—this would equate to approximately 260,000 orphans requiring care since the pandemic began (Caballero-Peralta et al., 2022). Some of these orphans are represented in this study.

According to Lowe et al. (2022), children and adolescents are generally at greater risk of disease and malnutrition and have higher rates of depression, post-traumatic stress disorder (PTSD), suicidal thoughts, and anxiety than adults, a conclusion exacerbated by the pandemic. This assertion has now been verified by international data that identify loneliness, anxiety, depression, insomnia, harmful alcohol and drug use, self-harm, and suicidal behaviour among children and adolescents because of home isolation; this finding is borne by research in Australia (Sicouri et al., 2023), Switzerland (Richard et al., 2023), and Greece (Magklara et al., 2023). In Perú, an informal survey of more than 500 families in Lima and Arequipa similarly found 69.2% of minors presented adverse behavioral changes due to home isolation and confinement (Caballero-Peralta et al., 2022), and in a cohort of 562 adolescents, most of whom were girls (88.3%) with an average age of 14.4 years, Fernandez-Canani, Burga-Cachay, and Valladares-Garrido (2022) found 21.4% experienced severe family dysfunction and 60.3% had PTSD during the pandemic.
The most common approach to protecting and caring for at-risk children and adolescents in Perú is to place them in residential care, despite international practices toward kinship care and family care. However, bullying and victimization in Peruvian residential care facilities have been associated with declines in the mental health and well-being of children and adolescents (Oriol et al., 2020). Research in an unrelated country (i.e., Malaysia) reinforces this observation, with significantly higher levels of depression, anxiety, and stress in adolescent orphans than in non-orphans (Sahad et al., 2018).

Our purpose in this study is to investigate the mental and physical health of adolescent orphans in Perú, and to ask whether improvements in their health can be attributed to the practice of Transcendental Meditation. Prior and recent controlled and meta-analytic studies suggest this expectation is not unreasonable (e.g., Avvenuti et al., 2020; Klimes-Dougan et al., 2020; Orme-Johnson & Barnes, 2014).

Our interest extends from orphans to carers. Previous controlled research on caregivers found a range of significant and on-trend improvements in several measures of cognitive function, mood, quality of life, and stress following exposure to Transcendental Meditation (Leach et al., 2015). According to Nestor et al. (2023), frontline healthcare workers who learned Transcendental Meditation also experienced a 45% reduction in depression and anxiety, and improvements of 33% in insomnia, 16% in emotional exhaustion, and 11% in well-being. Where possible, we have included evidence provided by carers to cast light on both their own mental and physical health as well as the mental and physical health of orphans in their care.

To achieve our purpose, the study will employ a cross-sectional research design, i.e., a point-in-time design which does not seek to draw statistically significant conclusions about cause and effect or make generalizations about the wider Peruvian population of orphans and carers. Rather, we consider that analytic generalizations about the practice of Transcendental Meditation might be possible in this context and the present research design should allow investigation of the overall phenomenon of orphanhood, with more rigorous research to follow.

A brief introduction to “practice architectures” may be useful here to ground our practice in theory. According to Vedeler and Reimer (2023), education involves the combined effect of social practices: the conversations, activities, and interactions by the various people involved in all aspects of education. These practices occur in intersubjective spaces— the spaces in which people encounter one another. Importantly, these practices and spaces are not purely theoretical, but are real, grounded, and experienced … the examination of practices must be site-specific, as practice architectures are particular to place and time. (pp. 64–65)

In this study, we therefore will not seek to “judge or rank, but to offer insights, learn from … context and experience, and discover new knowledge” (Vedeler & Reimer, 2023, p. 66).

**Case Study Design**

The present research used a case study design to examine orphans and carers in Perú. Case study research is flexible and allows for the use of applicable methods and data gathering and analysis techniques suited to the case. A mixed methods approach to data gathering (i.e., conducting both qualitative and quantitative methods in parallel, appropriate to complex social contexts) was applied in this study, and a combination of interpretive qualitative techniques
and basic descriptive and inferential statistics have been used for data analysis.

We have adopted the Type-2 case study design of Yin (2018). A case study of this type: 1). designates the “research context,” i.e., the setting or background which contextualizes the case and provides the set of circumstances surrounding the particular situation under consideration; 2). identifies the “research case” within the research context, i.e., the single unit or phenomenon of study; and 3). specifies the “embedded units of analysis,” i.e., the isolated sources of data within and about the case to be investigated. In this study, the research context was Programa Integral Nacional para el Bienestar Familiar (INABIF) in Perú; the research case was Hogar de Niñas Virgen de Fatima de Chejoña (HNVFC) in Puno; and the embedded units of analysis were of two types: A), adolescent female orphans (N = 49); and B), their adult female carers (N = 5).

Three instruments of investigation for orphan girls (structured interview questions, vernacular questionnaire, and the standardized DASS-21 test instrument) and two instruments for carers (structured interview questions and the DASS-21) were used to explore the topic of mental and physical health via three separately bounded but related research modules. The structured interview questions in research module one utilized a qualitative (QUAL) approach; the vernacular questionnaire in research module two utilized a quantitative (QUAN) approach; and the standardized DASS-21 test instrument in research module three utilized a quantitative (QUAN) approach, making this a cross-sectional, concurrent mixed methods case study. This case study structure, including an indication of where the research modules were located in the research design, is schematically represented in Figure 1.

![Figure 1: Case study research structure and content.](image)

This study is not experimental in nature; it is an observational case study. For this reason, the study does not seek to judge, rank, or “prove” anything, or to infer probability. Rather it seeks to construct knowledge about a phenomenon that occurred in a highly unique case within a remote under-researched educational context. Our aim therefore is learning, not justification or judgment.

The study is consistent with Vedeler and Reimer’s (2023) approach to research when they point out that

site ontologies teach us that practices are shaped by particular locations, contexts, and moments. With this in mind, our epistemic approach has been to develop research
methods that engage in site-specific conversations about aspects of education…. [Hence] the process of discovery is as important as the product. (p. 62)

Such a view suggests that “instead of turning away from or not taking into account real-life educational circumstances,” research of this type should “turn to the site ontological view to discover the educational practices as they happen and are experienced” (Vedeler & Reimer, p. 63). To that end, we seek to explore the phenomenon by facilitating “a context of discovery,” an approach “distinctly different from facilitating “a context of justification”” (Vedeler & Reimer, p. 63) as would be the case in experimental or quasi-experimental approaches.

**Research Context.** The research context for this study was the residential care system of Perú, within which there are 240 facilities for children and adolescents (Ortúzar et al., 2021; Oriol, et al., 2020). Fifty of these facilities, called “residential shelter centers” (Centros de Acogida Residencial or CAR), are administered by Programa Integral Nacional para el Bienestar Familiar (INABIF) or Comprehensive National Program for Family Welfare through its Unidad de Servicios de Protección de Niños, Niñas y Adolescentes (USPNNA) or Unit of Services for the Protection of Children and Adolescents. Many children and adolescents in CARs are indigenous Aymara orphans.

Ministerial Resolution No. 315-2012-MIMP stipulates that the purpose of INABIF is to contribute to the integral development of families in situations of vulnerability and social risk, with emphasis on children, adolescents, older adults, and people with disabilities who are faced with abandonment, and to promote their inclusion in society and the full exercise of their rights. INABIF is also charged specifically with protecting children and adolescents in situations of abandonment. INABIF is governed by an Executive Directorate, which is charged with its general administration and, as such, is responsible for planning, directing, controlling, coordinating, and supervising the technical, budgetary, and operational actions of the organization, ensuring compliance with government policies, plans, and institutional strategies to guide and ensure achievement of its objectives for children and adolescents.

USPNNA lists three CARs in Callao, 12 in Lima, two in Arequipa, four in Cusco, two in Jujuy, and 27 others throughout the country in most provinces. Four CARs—Hogar San Martín de Porres, Hogar Sagrado Corazón de Jesús, Especializado Rijchariy, and Hogar de Niñas Virgen de Fatima de Chejoña—are located in the province of Puno.

The orphan girls and carers in our study at Hogar de Niñas Virgen de Fatima de Chejoña are Aymara, a pre-Incan peoples living in the Puno area of Southern Perú for more than 5,000 years. Of importance in this region is the overlapping association of Aymaran and Quechuan language groups and customs which can be found in over extended and overlapping territories in western South America. For example, Emlen (2017) points out that Aymaran languages are spoken by two to three million people in parts of southern Peru, Bolivia, and northern Chile, as well as in “a handful of villages several hundred kilometers further north in the central Peruvian department of Lima” (p. 310). The characteristics of these indigenous language groups have been examined in relation to the Quechua with whom the Aymara share many lexical and cultural similarities. It is not within the scope of this paper to outline the unique language and cultural characteristics of the Aymara, but accounts of Aymaran language, history, tradition, and civilization can be found in Arocutipa et al. (2018), Banegas-Flores and Coler (2018), de Munter (2022), and Mamani-Bernabé (2015).

Nevertheless, to fully appreciate the research context, mention must be made of the wider political and policy backdrop against which this research was conducted. Such
Acknowledgment is particularly relevant because the study explores the lives of Aymarans who have been subjected to historic and current discrimination. Discrimination of this sort ranges from the pejorative language used to identify indigenous peoples in Perú (i.e., intolerance reflected in racist language) to cultural and geographic fragmentation (i.e., deculturization) due to colonization and attempted homogenization affecting the 52 indigenous peoples and 47 language groups identified in Perú, 33 language groups in Bolivia, and six language groups in Chile. According to Arocutipa et al. (2018), Aymarans are “one of the most important people in this scenario” (p. 319).

The 2018 study in Puno by Arocutipa et al. outlines some of the sources of discrimination. They highlight the effects of “atrocious colonization, in the whole historical process of the settlements around Lake Titicaca” (p. 319) by pointing out that colonization and homogenization have resulted in discrimination at every level of social and political discourse, including in the health and education sectors. Despite efforts by various governments to fragment Aymaran culture, and certainly discriminatory initiatives have been triumphant in many ways, Arocutipa et al. (2018) point out that due to their strong “Andean world roots,” Aymarans have preserved their vitality; the “unity and connection between… Aymarans still persists” (p. 318) despite their cultural and geographic suffering over many decades.

**Research Case.** This study was carried out at Hogar de Niñas Virgen de Fatima de Chejoña (HNVFC), or Virgin of Fatima Home for Girls of Chojoña, an all-girls CAR located about 30 km southeast of Puno’s central district, two kilometers from the eastern bank of Lake Titicaca at an altitude of 3,800 m, high on Perú’s Altiplano (15.84° S, 70.02° W). The orphan girls being cared for at HNVFC are Aymara. Figure 2 shows where HNFVC is located. Although an earlier orphanage pre-dates the present institution on the same site in Chejoña, USPNNA requested the establishment of Hogar Virgen de Fatima on 7 August 2014 with a capacity for 73 in-resident girls and adolescent women between the ages of eight and 18 years who are at risk of abandonment or abuse, or are otherwise vulnerable. It is not known what percentage of the girls at HNVFC have been orphaned as a result of the pandemic, but research in Perú more generally suggests that about 70% of institutionalized children and adolescents living in CARs have living parents who cannot take care of them (Sánchez-Luque et al., 2022).
In 2022, representatives of Instituto Maharishi de Ciencia y Tecnología del Perú were invited to teach Transcendental Meditation to residents and carers of HNVFC in the hope it would help girls with post-pandemic depression, anxiety, and disruptive stress behaviors. Practiced by children for 15 minutes in the morning and evening, Transcendental Meditation is a simple, natural, and easy mental technique of deep rest which has been successfully taught to children and adolescents throughout the world since the 1970s. It requires no effort and no change in lifestyle or belief is required.

Recent findings indicate the practice by children results in improved executive function, memory, and the ability to control responses to stimuli, and suggests “girls who participated [in Transcendental Meditation] experienced fewer feelings of aggression, fear, and frustration” (Conti et al., 2022, p. 17). Waters et al. (2015), reviewed “evidence from 15 peer-reviewed studies of school meditation programs with respect to three student outcomes: well-being, social competence, and academic achievement,” and concluded that “Transcendental Meditation programs had a higher percentage of significant effects than mindfulness-based and other types of meditation programs” (p. 103).

The application of Transcendental Meditation in schools has been discussed by van Assche (2019) and others (e.g., Herani et al., 2015), and a comprehensive survey of its research literature has been provided by Dillbeck (2020) with an explanation of differences between Transcendental Meditation and mindfulness provided by Brown (2020). Orme-Johnson (2020) in The Oxford Handbook of Meditation examined the relationship of Transcendental Meditation in outcomes for children and adolescents, and his work is therefore instructional.

This research project was approved in March 2022 by the Research Ethics Approval Committee of Maharishi Vedic Research Institute (MVRI) (approval no. MVRI-2022-025), an Approved Research Institute (ARI) of the Australian Federal Government, in accordance with MVRI’s Code of Research Practice and Procedure and was conducted under the strictest terms of research integrity and ethical practice. 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 at HNVFC and by Instituto
Maharishi de Ciencia y Tecnología del Perú; prior informed consent of all orphan participants was provided on their behalf by the Director of HNVFC; carer participants provided their own informed consent.

INABIF, HNVFC, and participants were not involved in setting the objectives, research questions, or outcome measures for the three research modules applied in this study, and none were involved in developing plans for the design or implementation of the study (other than sanctioning the research). No government officials, administrators, or participants were asked to advise on the interpretation or writing up of results. While there were no specific plans or agreement to disseminate the results of this research to INABIF, HNVFC, or study participants, study results were provided to the incoming Director of HNVFC upon completion.

**Embedded Units of Analysis.** Yin (2018) defines a “unit of analysis” as a “particular source of evidence about the case (p. 102).” A total of 49 adolescent female orphans and five female adult carers volunteered to participate in this study. Each sub-group of participating orphans and carers will be duly described in the following three research modules.

For the purposes of this study, a “research module” means a bounded exploration of the topic which is limited in scope and purpose. The research modules, composed of different participant combinations and measures, are free-standing but should be considered collectively as part of, and as descriptive contributors to, the overall case. All research modules were conducted three months after orphans and carers were instructed in Transcendental Meditation (i.e., in December 2022) and are cross-sectional in nature.

The high-level question motivating this study is: How has the introduction of Transcendental Meditation affected orphan girls and carers in a post-pandemic Hogar de Niñas Virgen de Fatima de Chejoña? In case study research, this level of general inquiry is what Yin (2018) calls a Level 2 question and is associated with the case. The specific and separate research questions (RQs) related to embedded units of analysis posited for each research module to help answer the higher-level questions are what Yin (2018) calls Level 1 questions. To help answer the Level 2 question, the following three sections outline the specific objectives, participants, methods and analyses, results, and inferences related to each of the three research modules that make up the case study.

**Research Module One**

**Objective.** Research module one sought to qualitatively explore orphan and carer perceptions of the value of Transcendental Meditation along five main dimensions: health; personal relations; behavior; safety and security; and the future. Research module one was preliminary in nature and did not aim to reach conceptual or operational saturation (Saunders et al., 2018). It did, however, provide initial evidence from which qualified deductive inferences may be derived when coupled with the modes of investigation used in the other two research modules.

Two Level 1 research questions guided this module: RQ1). Do girls at HNVFC report that Transcendental Meditation had a salutary effect on their health, personal relations, behavior, safety and security, and the future; and RQ2). Do carers at HNVFC, as a result of observing and interacting with the girls over a three-month period, confirm that Transcendental Meditation had a salutary effect on the girls’ health, personal relations, behavior, safety and security, and the future?
**Participants.** Three months after instruction in Transcendental Meditation, four girls out of the total 49 who learned Transcendental Meditation (deidentified as MAC, MBC, AMZ, and TAF) volunteered to answer six questions about the practice of Transcendental Meditation and their response to it. MAC was 14 years old in Grade 3 secondary; MBC was 14 years old in Grade 3 secondary; AMZ was 15 years old in Grade 4 secondary; and TAF was 15 years old in Grade 4 secondary. Three months after the girls were instructed in Transcendental Meditation, four HNVFC carers (designated as Carers A, B, C, and D) volunteered to answer seven questions about their perceptions of the health and behavior of the entire cohort of 49 girls before and after they were instructed in Transcendental Meditation, along with the safety, security, and quality of life in HNVFC after the girls had been practicing Transcendental Meditation.

**Method and Analysis.** Structured interviews were carried out in December 2022 for both girls and carers. As shown in Figure 4, girls were asked a series of before-and-after questions, including 1A: “How would you describe your physical health before learning Transcendental Meditation?” followed by 1B: “How would you describe your physical health after learning Transcendental Meditation?” Two questions (5B and 6B) related to girls’ perceptions of the orphanage community and their future after learning Transcendental Meditation without making comparisons to perceptions before learning Transcendental Meditation.

Carers served as third-person key informants of the phenomenon. As shown in Figures 5 and 6, carer questions included 1A: “How would you describe the girls' physical health before learning Transcendental Meditation?” followed by 1B: “How would you describe the girls’ physical health after learning Transcendental Meditation?” Four questions (4B to 7B) related to the carers’ perceptions of girls after learning Transcendental Meditation without comparing to the pre-intervention perceptions.

Interview responses from both girls and carers were rated according to the following convention. Responses related to before learning Transcendental Meditation (i.e., baseline) are represented by the central line in each Figure. A response to a question related to after learning Transcendental Meditation was rated as either a lot of negative change, some negative change, no change, some positive change, and a lot of positive change. These qualitative data represent the directionality of change before and after learning Transcendental Meditation as reported by the girls themselves (Figure 4) and as a result of observation of girls by carers (Figures 5 and 6).

**Results.** Figures 4, 5, and 6 present the results of interviews. Before and after responses of girls include: MBC, from saying “I feel more relaxed and calm” after learning Transcendental Meditation to “I feel more relaxed and calm” before learning Transcendental Meditation (rated as a lot of positive change); AMA, from saying “I feel like I have more friends. I feel like I have improved in my ability to share with them” after learning Transcendental Meditation to “I feel more relaxed and calm” before learning Transcendental Meditation (rated as a lot of positive change); and TAF, from saying “A bit safe” before learning Transcendental Meditation to “Sometimes I do mistrust others, but not as much as before” after learning Transcendental Meditation (rated as some positive change). A general positive change in direction for girls can be observed. Only one “some negative change” and two “no change” responses were recorded.

Before and after responses of carers include: Carer A, from saying “The girls were inactive and listless” before learning Transcendental Meditation to “The girls participate in activities more” after learning Transcendental Meditation (rated as some positive change); Carer C,
from saying “The girls were rebellious, unstable; they did not control their impulses when a comment was made about them; they reacted without measuring its consequences” before learning Transcendental Meditation to “The girls are calmer; it helped them to a large extent eliminate stress, and their emotional state is better” (rated as a lot of positive change); and Carer D, reported that “The girls feel safer and more trustworthy” (rated as a lot of positive change). Moderate responses with words such as ”some,” ”more,” and ”most” were scored lower than responses that included phrases like ”all girls” and ”the girls improved.” A general positive change in girls by carers can be observed. There were no responses such as ”a lot of negative change,” ”some negative change,” or ”no change” recorded by carers.
### Before Learning Transcendental Meditation

**1A.** How would you describe your physical health before learning Transcendental Meditation?
- MAC: “Normal; I got sick from time to time.”
- MBC: “My health was regular; I got sick.”
- AMZ: “Regular health.”
- TAF: “Normal.”

**2A.** How would you describe your mental health and stability before learning Transcendental Meditation?
- MAC: “I carried some sorrows.”
- MBC: “Tense and worried.”
- AMZ: “Nervous.”
- TAF: “A little sad, downhearted.”

**3A.** How would you describe the state of your personal relations with teachers and other girls before learning Transcendental Meditation?
- MAC: “I always felt that I was right.”
- MBC: “I felt that I was superior to them, more proud.”
- AMZ: “I felt upset, nervous, and uncomfortable.”
- TAF: “I felt like I can’t change anything; I remain the same.”

**4A.** How safe and secure do you feel?
- MAC: “I felt more afraid before; it was difficult for me to talk to others.”
- MBC: “I felt nervous, somewhat discouraged.”
- AMZ: “I felt that I was not going to get out of my previous situation and that everything was going to go wrong.”
- TAF: “A bit safe.”

**5A.** —

**6A.** —

### After Learning Transcendental Meditation

**1B.** How would you describe your physical health after learning Transcendental Meditation?
- AMAC: “Normal, as before.”
- MBC: “It’s been a while since I got sick.”
- AMZ: “Now I feel better.”
- TAF: “I get sick less thanks to meditation.”

**2B.** How would you describe your mental health and stability after learning Transcendental Meditation?
- MAC: “I feel better; I’m happy, but a little angry at times.”
- MBC: “I feel more like doing some activities and less listless.”
- AMZ: “I feel happy and calm.”
- TAF: “I feel more relaxed and calm.”

**3B.** How would you describe the state of your personal relations with teachers and other girls after learning Transcendental Meditation?
- MAC: “I no longer distance myself from others; I no longer feel bored.”
- MBC: “I feel calmer, but there are still some features of my personality that I dislike.”
- AMZ: “I feel like I have more friends. I feel that I have improved in my ability to share with them.”
- TAF: “It irritates me that they talk to me.”

**4B.** How safe and secure do you feel?
- MAC: “I feel more confident in front of others, I am no longer afraid.”
- MBC: “I feel confident, less nervous.”
- AMZ: “I feel more sure of myself, I feel that I can achieve everything.”
- TAF: “Sometimes I do mistrust others, but not as much as before.”

**5B.** How do you feel now in the community of the orphanage?
- MAC: “I feel less sad, just more thoughtful.”
- MBC: “I feel more peaceful, with less resentment.”
- AMZ: “I feel less sad, I am no longer depressed.”
- TAF: “I feel less depressed.”

**6B.** How do you feel about your future since learning Transcendental Meditation?
- MAC: “I am more tolerant with others; I feel better.”
- MBC: “I’m not so sad and irritated anymore.”
- AMZ: “I feel that I can improve more.”
- TAF: “No change.”

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**Figure 4:** Interview questions and responses 1–6 from orphan girls about their experience before and after learning Transcendental Meditation.
Figure 5: Interview questions and responses 1–3 from carers about their perception of girls’ experiences before and after learning Transcendental Meditation.
After Learning Transcendental Meditation

4B. How safe and secure do you think the girls feel?
   Carer A. Most girls feel more secure and confident.
   Carer B. Some girls it can be observed to be more mature, and project their future life with positivity.
   Carer C. The girls feel good and more confident.
   Carer D. The girls feel safer and more trustworthy.

5B. Has the girls’ behaviour changed?
   Carer A. The girls improved their behaviour:
   Carer B. Some girls showed positive changes, always with the support of the tutors.
   Carer C. The girls improved their behaviour and their emotions.
   Carer D. The girls have improved their behaviour and their coexistence with companions.

6B. How do you describe the overall community of girls in the orphanage?
   Carer A. We can continue to improve with meditation.
   Carer B. The girls are happier and safer.
   Carer C. The girls have improved their behaviour.
   Carer D. Improvement is observed; the girls are calmer and happier.

7B. How do you think the girls feel about their future since learning Transcendental Meditation?
   Carer A. The girls are going on to achieve their objectives and goals thanks to meditation and working together with the staff.
   Carer B. With the support of the staff and meditation, they already have a clearer idea of what to do later.
   Carer C. The girls are calmer and happier, but they still need family affection.
   Carer D. Some girls with meditation are beginning to reach their goals for the future.

Figure 6: Interview questions and responses 4–7 from carers about their perception of girls’ experiences after learning Transcendental Meditation.
Inference. Despite being limited to only four girls and four carers, and despite the interviews being structured and not unstructured or semi-structured and therefore not yielding thick data, results suggest girls generally found Transcendental Meditation to be helpful in improving their mood. Words such as “sorrow,” “nervous,” “tense,” and ”sad” being replaced by words like “happy,” “less listless,” ”relaxed,” and “calm” were commonplace. Similarly, the practice appears to have impacted personal relations, with words such as “uncomfortable,” ”proud,” and ”upset”” being replaced by phrases like “no longer bored,” feeling ”calmer,” and having ”more friends.” Feelings of fear, nervousness, and hopelessness were apparently replaced by feelings of greater confidence, assurance, and a sense of achievement.

Perceptions of girls by carers also appeared to have altered after three-month’s practice of Transcendental Meditation with observations of listlessness, inactivity, rebelliousness, distrustfulness, and vulnerability being replaced by a sense of confidence, reliability, greater engagement with activities and others, and increased calmness in the girls. As a result, according to the carers, girls felt “happier and safer,” with the inference being that a positive directional change in health can be tentatively associated with the practice of Transcendental Meditation and what appear to be improved relations with carers.

Research Module Two

Objective. The purpose of research module two was to begin quantitatively confirming the findings of research module one. We sought to achieve this goal by asking girls to reflect on their experiences after Transcendental Meditation and report them honestly. Three Level 1 research questions guide this research module: RQ1). Will more girls at HNVFC agree that the practice of Transcendental Meditation had a salutary effect on their physical, cognitive, and emotional health and their school performance than those who do not agree; RQ2). How do the findings of RQ1 compare to normative student data on these measures from elsewhere in Perú; and RQ3). Are higher scores on these measures positively linked to regularity of practice?

Participants. Thirty-six girls ($M_{age} = 14.67, SD_{age} = 1.26$), out of the total cohort of 49 girls who learned Transcendental Meditation volunteered to participate in research module two: 14 (40%) Grade 2 secondary ($M_{age} = 13.57, SD_{age} = 0.65$); 12 (34%) Grade 3 secondary ($M_{age} = 14.58, SD_{age} = 0.67$); and ten (29%) Grade 4 secondary ($M_{age} = 16.30, SD_{age} = 0.48$). Inclusion criteria consisted of: 1). secondary-aged student; 2). self-reported practice of Transcendental Meditation for at least three months before data collection as part of HNVFC’s daily routine; and 3). a willingness to answer questions honestly.

Method and Analysis. A vernacular paper-and-pencil test, completed anonymously, was administered. This Spanish-language questionnaire consisted of 47 statements, requiring a self-reported rating on a 1–10 Likert scale, with 1–3 representing ”definitely disagree,” 4–5 ”disagree,” 6–7 “agree,” and 8–10 ”definitely agree.” Average scores of <5.50 mean that girls disagree with the statement, while scores of ≥5.50 mean girls agree with the statement. Statements were clustered into the following four main categories: Factor 1—Physical Health; Factor 2—Cognitive Health; Factor 3—Emotional Health; and Factor 4—School Performance.

Factor 1 included 13 statements related to physical health, with orphan girls asked to rate their tiredness, energy, sickness, quality of sleep, and athletic ability as a result of practicing Transcendental Meditation, such as “Tengo más energia” (I have more energy). Factor 2 included 10 statements related to cognitive health, with girls asked to rate their memory, comprehension, and problem-solving ability as a result of practicing Transcendental
Meditation, such as “Entiendo major las cosas” (I understand things more). Factor 3 included 12 statements related to emotional health, with girls asked to rate their aggression, affective relations, friendliness, and happiness as a result of practicing Transcendental Meditation, such as “Me siento mas confiado en lo que hago” (I feel more confident in what I do). Factor 4 included 12 questions related to academic and general performance at school, with orphan girls asked to rate their satisfaction and efficiency at school, getting along with classmates, academic achievement, and truancy as a result of practicing Transcendental Meditation, such as “Me siento satisfecho en mi colegio” (I feel satisfied in my school).

Cronbach alpha coefficients ($\alpha$) computed for scale reliability of Factors in relation to each other and to the overall construct of health and school performance (i.e., the combined score of all Factors) have previously yielded internal consistencies of $\alpha = .81$ for average reliability between Factors and $\alpha = .86$ for reliability of all Factors combined (Fergusson et al., 2021b).

Girls were also asked to report the regularity with which they practiced Transcendental Meditation since being instructed, with response options being: 1). the recommended daily routine ”twice a day” (scored as 5); 2). ”once a day” (scored as 4); 3). ”from time-to-time” (scored as 3); 4). ”when required” (scored as 2); and 5). “never” (scored as 1). Elsewhere, regularity of practice of Transcendental Meditation has been found to correlate with higher levels of childhood resilience (Wendt, 2015). Data were analyzed using analysis of variance ($F$) and Pearson correlation coefficients ($r$), tested at the two-tailed, 95% level of confidence.

Pre-pandemic research in Perú previously applied this vernacular paper-and-pencil test of health and school performance to 91 students at German Pomalaza Rixe (Fergusson et al., 2021b), a primary and secondary school located in Huay-Huay, one of ten districts in Yauli province in the Junín region of central Perú, and to a total of 520 students (i.e., the normative Peruvian data used in this module) at four schools: Institucion Educativa Emblematica Cesar Vallejo, a government-run public school in the La Victoria district of central Lima; Institución Educativa Privada Prescott, a private school in Puno; Institución Educativa Colegio Santa María Reyna, a private school in the Ventanilla district of Callao; and Colegio Tomasa Ttito Condemayta, a government-run public school in the Acomayo district of Cusco (Fergusson et al., 2022a). These 611 student data points from Perú served as the source of “normative” data in this research module.

**Results.** Cronbach alpha coefficients computed for scale reliability within Factors yielded internal consistencies of $F1 \alpha = .88$; $F2 \alpha = .88$; $F3 \alpha = .86$; and $F4 \alpha = .83$, which were higher than in prior research. Table 1 shows that the number of girls who reported they agreed or definitely agreed with statements related to all Factors was 21 (56%) compared with 15 (44%) who did not, a lower percentage than the norm at 65% versus 35%. The average score on the ten-point scale by girls was 6.20 versus the norm of 6.60.

When analyzed by Factor using analysis of variance, no differences between the score of HNVFC girls or other Peruvian students were observed for $F1 (F = 1.34, p = .09)$ or $F2 (F = 0.25, p = .40)$ but differences were observed between $F3 (F = 2.57, p = .005)$ and $F4 (F = 2.65, p = .004)$. The difference between disagreement (all scores <5.50) and agreement (all scores $\geq 5.50$) of statements associated with the self-reported impact of Transcendental Meditation was statistically significant for all Factors ($F = 9.14, p < .00001$), a finding comparable to the norm.

Data in Table 2 indicate that each of the four Factors was closely related to each other, with clear correlations between physical, cognitive, and emotional health, and school performance.
(corrF1:F2 $r = 0.72$; corrF1:F3 $r = 0.79$; and corrF1:F4 $r = 0.62$), between cognitive health and emotional health and school performance (corrF2:F3 $r = 0.75$ and corrF2:F4 $r = 0.65$), and between emotional health and school performance (corrF3:F4 $r = 0.80$). These findings compare favorably with earlier correlations for the same instrument.

**Table 1:** Number and percentage of respondents, means, and standard deviations for HNVFC girls and normative Peruvian data (top), and means, standard deviations, and test of the difference between low and high scores for HNFVC and normative Peruvian data (bottom).

<table>
<thead>
<tr>
<th>Source</th>
<th>Number and Percentage of Respondents Who Definitely Disagree</th>
<th>Number and Percentage of Respondents Who Disagree</th>
<th>Number and Percentage of Respondents Who Agree</th>
<th>Number and Percentage of Respondents Who Definitely Agree</th>
<th>Mean and Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1</td>
<td>HNVFC $n = 10.29%$</td>
<td>$n = 7.19%$</td>
<td>$n = 12.33%$</td>
<td>$n = 7.19%$</td>
<td>$M = 5.78, SD = 1.0$</td>
</tr>
<tr>
<td></td>
<td>Normative $n = 50.8%$</td>
<td>$n = 174.37%$</td>
<td>$n = 217.41%$</td>
<td>$n = 79.14%$</td>
<td>$N = 61.7, SD = 1.6$</td>
</tr>
<tr>
<td>Factor 2</td>
<td>HNVFC $n = 2.5%$</td>
<td>$n = 13.36%$</td>
<td>$n = 10.28%$</td>
<td>$n = 11.31%$</td>
<td>$N = 6.61, SD = 1.9$</td>
</tr>
<tr>
<td></td>
<td>Normative $n = 43.8%$</td>
<td>$n = 143.28%$</td>
<td>$n = 218.42%$</td>
<td>$n = 116.22%$</td>
<td>$N = 6.30, SD = 1.7$</td>
</tr>
<tr>
<td>Factor 3</td>
<td>HNVFC $n = 7.19%$</td>
<td>$n = 9.25%$</td>
<td>$n = 12.94%$</td>
<td>$n = 8.22%$</td>
<td>$N = 6.15, SD = 1.9$</td>
</tr>
<tr>
<td></td>
<td>Normative $n = 25.5%$</td>
<td>$n = 119.25%$</td>
<td>$n = 215.42%$</td>
<td>$n = 161.23%$</td>
<td>$N = 6.85, SD = 1.6$</td>
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<tr>
<td>Factor 4</td>
<td>HNVFC $n = 3.8%$</td>
<td>$n = 11.31%$</td>
<td>$n = 17.47%$</td>
<td>$n = 5.14%$</td>
<td>$N = 6.28, SD = 1.8$</td>
</tr>
<tr>
<td></td>
<td>Normative $n = 23.4%$</td>
<td>$n = 118.23%$</td>
<td>$n = 192.37%$</td>
<td>$n = 187.36%$</td>
<td>$N = 6.88, SD = 1.6$</td>
</tr>
<tr>
<td>Average</td>
<td>HNVFC $n = 5.16%$</td>
<td>$n = 10.29%$</td>
<td>$n = 13.35%$</td>
<td>$n = 8.21%$</td>
<td>$N = 6.20, SD = 1.6$</td>
</tr>
<tr>
<td></td>
<td>Normative $n = 35.6%$</td>
<td>$n = 139.29%$</td>
<td>$n = 210.41%$</td>
<td>$n = 136.24%$</td>
<td>$N = 6.60, SD = 1.6$</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>Score $&lt;5.50$ (Definitely Disagree/Disagree)</th>
<th>Score $\geq 5.50$ (Agree/Definitely Agree)</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
</tr>
<tr>
<td>Factor 1</td>
<td>HNVFC</td>
<td>3.09</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Normative</td>
<td>5.91</td>
<td>1.1</td>
</tr>
<tr>
<td>Factor 2</td>
<td>HNVFC</td>
<td>4.43</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Normative</td>
<td>4.59</td>
<td>1.0</td>
</tr>
<tr>
<td>Factor 3</td>
<td>HNVFC</td>
<td>4.42</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>Normative</td>
<td>4.84</td>
<td>1.1</td>
</tr>
<tr>
<td>Factor 4</td>
<td>HNVFC</td>
<td>4.36</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Normative</td>
<td>4.91</td>
<td>1.1</td>
</tr>
<tr>
<td>Average</td>
<td>HNVFC</td>
<td>4.27</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Normative</td>
<td>5.06</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Regularity of meditation was also correlated at a greater than 95% level of confidence, with physical health ($r = 0.38$), cognitive health ($r = 0.34$), emotional health ($r = 0.37$), and school performance ($r = 0.35$). These findings compare with earlier findings that found the regularity with which children practice Transcendental Meditation is associated, albeit only moderately but significantly, with physical health ($r = 0.27$), cognitive health ($r = 0.35$), emotional health ($r = 0.26$), and school performance ($r = 0.30$) (Fergusson et al., 2022a) and reflect the earlier findings on regularity of Transcendental Meditation practice and well-being observed by Wendt et al. (2015).
Table 2: Correlations of four Factors with regularity of meditation for HNVFC girls and Peruvian normative data.

<table>
<thead>
<tr>
<th>Source</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Regularity of Transcendental Meditation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1</td>
<td>HNVFC</td>
<td>—</td>
<td>—</td>
<td>$r = .38$</td>
</tr>
<tr>
<td></td>
<td>Normative</td>
<td>—</td>
<td>—</td>
<td>$r = .27$</td>
</tr>
<tr>
<td>Factor 2</td>
<td>HNVFC</td>
<td>$r = .72$</td>
<td>—</td>
<td>$r = .34$</td>
</tr>
<tr>
<td></td>
<td>Normative</td>
<td>$r = .74$</td>
<td>—</td>
<td>$r = .35$</td>
</tr>
<tr>
<td>Factor 3</td>
<td>HNVFC</td>
<td>$r = .79$</td>
<td>$r = .75$</td>
<td>$r = .37$</td>
</tr>
<tr>
<td></td>
<td>Normative</td>
<td>$r = .72$</td>
<td>$r = .77$</td>
<td>$r = .26$</td>
</tr>
<tr>
<td>Factor 4</td>
<td>HNVFC</td>
<td>$r = .62$</td>
<td>$r = .65$</td>
<td>$r = .35$</td>
</tr>
<tr>
<td></td>
<td>Normative</td>
<td>$r = .68$</td>
<td>$r = .77$</td>
<td>$r = .30$</td>
</tr>
</tbody>
</table>

Inference. The findings of research module two are mostly consistent with findings using the same vernacular instrument at five schools in Perú. While the statistically significant difference in the number of girls who reported improvements in health and school performance was greater than the number of those who did not, thereby answering RQ1, the difference was not convincing and lower than the norm. Perhaps this was due to the shorter time between learning Transcendental Meditation and post-testing, or perhaps the girls had higher levels of post-pandemic distress, sadness, and worry at pre-intervention than other pre-pandemic Peruvian children. Without pre-test data, it is difficult to know, but RQ2 is answered by such data. Findings also indicate that responses on the instrument are internally consistent with normative data and that Factors of health and school performance are correlated.

Most interesting is the finding that regularity of meditation is associated with higher levels of health and better school performance, which confirms earlier outcomes at other institutions in Perú, thereby answering RQ3. While only weak-to-moderate associations were observed in both HNVFC and the five other school settings, they are consistent with those reported elsewhere outside Perú.

Research Module Three

Objective. Research module three sought to measure the state of post-pandemic depression, anxiety, and stress in both girls and carers after practicing Transcendental Meditation. To our knowledge, this is the first time a standardized test instrument of these measures has been used for this purpose with orphans and carers in Perú. Two Level 1 research questions guide this module: RQ1). What are the levels of depression, anxiety, and stress in girls and carers at HNVFC; and RQ2). How do these levels compare to best-available comparative data?

Participants. Girls and carers participated in research module three. Thirty-five girls ($M_{age} = 14.46, SD_{age} = 1.12$), out of the total cohort of 49 girls who learned Transcendental Meditation, volunteered to participate: 15 (40%) Grade 2 secondary ($M_{age} = 13.60, SD_{age} = 0.51$); 11 (29%) Grade 3 secondary ($M_{age} = 14.27, SD_{age} = 0.47$); and nine (29%) Grade 4 secondary ($M_{age} = 16.11, SD_{age} = 0.33$). Inclusion criteria for girls consisted of: 1). secondary-aged students; 2). self-reported regular practice of Transcendental Meditation for at least three months before data collection as part of HNVFC’s daily routine; and 3). a willingness to...
answer written questions honestly. Five female carers (average age ≈40 years) volunteered to participate, although no specific data on age, time spent at HNVFC, or level of experience as a carer were provided.

**Method and Analysis.** Research module three used the 21-item DASS-21 to measure depression, anxiety, and stress (Lovibond & Lovibond, 1995). According to Gomez (2016), the DASS-21 is a 21-item self-report questionnaire designed to measure the severity of a range of symptoms common to both depression and anxiety. In completing the DASS-21, the individual is required to indicate the presence of a symptom over the previous week. Each item is scored from “0” (did not apply to me at all over the last week) to “3” (applied to me very much or most of the time over the past week). Gomez (2016) maintains the essential function of the DASS-21 is to “assess the severity of the core symptoms of depression, anxiety and stress.”

Based on normative data, results on the DASS-21 are scored and categorized according to the following criteria:

- **Depression:** “normal” (z-score <0.5; score range 0–4), ”mild” (z-score = 0.5–1.0; score range 5–6), ”moderate” (z-score = 1.0–2.0; score range 7–10), ”severe” (z-score = 2.0–3.0; score range 11–13), and ”extremely severe” (z-score >3.0; score 14+);

- **Anxiety:** “normal” (z-score <0.5; score range 0–3), ”mild” (z-score = 0.5–1.0; score range 4–5), ”moderate” (z-score = 1.0–2.0; score range 6–7), ”severe” (z-score = 2.0–3.0; score range 8–9), and ”extremely severe” (z-score >3.0; score 10+);

- **Stress:** “normal” (z-score <0.5; score range 0–7), ”mild” (z-score = 0.5–1.0; score range 8–9), ”moderate” (z-score = 1.0–2.0; score range 10–12), ”severe” (z-score = 2.0–3.0; score range 13–16), and “extremely severe” (z-score >3.0; score 17+).

Mellor et al. (2018) used the DASS-21 in Chile to study 448 female adolescents, Apaza-Llantoy and Correa-López (2021) used the DASS-21 to study 210 police officers in Lima, and Sinclair et al. (2012) used it to study 503 U.S. adults. These data have been included in research module three for comparative purposes and are shown in Tables 3 and 4.

**Results.** Cronbach alpha coefficients computed for scale reliability yielded internal consistencies for depression $C_\alpha = 0.78$; anxiety $C_\alpha = 0.77$; and stress $C_\alpha = 0.83$, which are comparable to prior research on Chilean girls for depression $C_\alpha = 0.85$, anxiety $C_\alpha = 0.72$, and stress $C_\alpha = 0.79$ (Mellor et al., 2018, p. 141) and for normative data from the instrument’s developers (depression $C_\alpha = 0.81$, anxiety $C_\alpha = 0.73$, and stress $C_\alpha = 0.81$) (Lovibond & Lovibond, 1995, p. 27).

As shown in Table 3, for depression, 13 (37%) girls were categorized as normal, nine (26%) were categorized as mild, and 13 (37%) were categorized as moderate; none were categorized as severe or extremely severe. For anxiety, 15 (43%) girls were categorized as normal, five (14%) categorized as mild, ten (29%) were categorized as moderate, and five (14%) were categorized as severe; none were categorized as extremely severe. For stress, 29 (83%) girls were categorized as normal, five (14%) were categorized as mild, and one (3%) was categorized as moderate. No data for this form of categorization was found for comparable girls.

As also shown in Table 3, for depression, four (80%) carers were categorized as normal and one (20%) was categorized as mild; none were categorized as moderate, severe, or extremely severe. For anxiety, four (80%) carers were categorized as normal and one (20%) was
categorized as mild; none were categorized as moderate, severe, or extremely severe. For stress, five (100%) carers were categorized as normal; none were categorized as mild, moderate, severe, or extremely severe. Table 3 compares these data to the findings of police officers in Lima (Apaza-Llantoy & Correa-López, 2021). These comparative data for police officers in Lima are the best available in Perú for adults who work under similar stressful social conditions.

**Table 3**: Total number and percentage of participants in each category as they compare to police officers in Lima.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>'Normal' Total and Percentage</th>
<th>'Mild' Total and Percentage</th>
<th>'Moderate' Total and Percentage</th>
<th>'Severe' Total and Percentage</th>
<th>Extremely Severe Total and Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>13 (37%)</td>
<td>9 (26%)</td>
<td>15 (37%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>15 (43%)</td>
<td>5 (14%)</td>
<td>10 (29%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Stress</td>
<td>29 (83%)</td>
<td>5 (14%)</td>
<td>3 (8%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Girls at HNVFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
</tr>
<tr>
<td>Anxiety</td>
</tr>
<tr>
<td>Stress</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carers at HNVFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
</tr>
<tr>
<td>Anxiety</td>
</tr>
<tr>
<td>Stress</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Female and Male Police Officers in Lima</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
</tr>
<tr>
<td>Anxiety</td>
</tr>
<tr>
<td>Stress</td>
</tr>
</tbody>
</table>

Table 4 compares the findings for girls at HNVFC (average score for depression = 10.17, anxiety = 8.54, and stress = 8.25) with comparative data from Mellor et al. (2018) for Chilean girls ($M_{age} = 15.84, SD_{age} = 1.35$ (average scores for depression = 6.72, anxiety = 5.50, and stress = 7.55)).

Table 4 also compares findings for carers at HNVFC (average score for depression = 5.60, anxiety = 5.69, and stress = 9.20) with comparative data from Sinclair et al. (2012, p. 269) for the U.S. adult population ($M_{age} = 44.70, SD_{age} = 16.3$; average score for depression = 5.70, anxiety = 3.99, and stress = 8.12). These findings are schematically represented in Figures 7 and 8.

**Table 4**: Means, standard deviations, and categories for depression, anxiety, and stress for HNVFC girls after practicing Transcendental Meditation and comparative Chilean adolescent population, (top) and carers after practicing Transcendental Meditation and comparative U.S. adult population (bottom).

<table>
<thead>
<tr>
<th>Dimension</th>
<th>HNVFC $M$ (SD)</th>
<th>Category</th>
<th>Normative Data $M$ (SD)</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>10.17 (5.42)</td>
<td>Moderate</td>
<td>6.72 (5.02)</td>
<td>Mild</td>
</tr>
<tr>
<td>Anxiety</td>
<td>8.54 (5.43)</td>
<td>Severe</td>
<td>5.50 (3.90)</td>
<td>Mild</td>
</tr>
<tr>
<td>Stress</td>
<td>8.49 (5.69)</td>
<td>Mild</td>
<td>7.55 (4.20)</td>
<td>Normal</td>
</tr>
<tr>
<td>Total</td>
<td>27.20</td>
<td>19.77</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Carers    |                |          |                         |          |
| Depression| 5.60 (3.05)    | Mild     | 5.70 (8.20)             | Mild     |
| Anxiety   | 5.69 (4.51)    | Mild     | 3.99 (6.27)             | Normal   |
| Stress    | 9.20 (2.59)    | Mild     | 8.12 (7.67)             | Mild     |
| Total     | 20.49          | 17.81    |                         |          |
As shown in a different educational context, linear regression analysis has shown that depression, anxiety, and stress are predictors of happiness and school performance (Silva & Figueiredo-Baraga, 2018). In this study, as would be expected, depression correlated to anxiety ($r = .74, p < .00001$) and to stress ($r = .77, p < .00001$), and anxiety correlated to stress ($r = .79, p < .00001$).

![Figure 7: DASS-21 scores for HNVFC orphan girls (left) and comparative data for Chilean girls (right).](image1)

**Figure 7:** DASS-21 scores for HNVFC orphan girls (left) and comparative data for Chilean girls (right).

![Figure 8: DASS-21 scores for HNVCF carers (left) and comparative data for U.S. adult population (right).](image2)

**Figure 8:** DASS-21 scores for HNVCF carers (left) and comparative data for U.S. adult population (right).

**Inference.** These findings reveal the levels of depression, anxiety, and stress in girls at HNVFC and show them to be higher than levels observed in comparable Chilean girls.
However, the differences between HNVFC girls and the comparative group are generally less than one standard deviation. Typically, a score greater than one standard deviation above the mean would be deemed a significant state of depression, anxiety, or stress but this phenomenon was not observed in the present case. In another setting, adolescent orphans had significantly higher levels of depression, anxiety, and stress than non-orphans when measured by the DASS-21 (Sahad et al., 2018). Nevertheless, scores for depression, anxiety, and stress indicate HNVFC girls had higher levels of each variable compared to other girls in the region.

The findings also reveal there is no obvious difference between the depression, anxiety, and stress levels of carers and comparative adults, and are indeed generally lower than police officers in Lima, thereby answering RQs 1 and 2. Obviously, the girls and carers at HNVFC versus Chilean girls, police officers, and U.S. adults are not entirely comparable, but the indicative data in research module three suggest girls at HNVFC have higher levels of depression, anxiety and stress than comparable adolescents, while carers are essentially the same as other adults in Perú and elsewhere. The actual impact of Transcendental Meditation on the depression, anxiety, and stress of orphan girls and their carers should be the subject of more rigorous longitudinal research.

Discussion

As stated previously, the present study is part of a multi-school, multi-context, pre-, peri-, and post-pandemic research program of Transcendental Meditation in Perú. The research program now consists of the following three phases. Pre-pandemic qualitative and quantitative research associated with Transcendental Meditation in a high-altitude, remote Andean school (Fergusson et al., 2021b), a larger-scale confirmatory study of children in four distinct and disparate urban, regional and remote school settings (Fergusson et al., 2022a), third-person perspectives of parents and teachers on how practice of Transcendental Meditation has affected children (Fergusson et al., 2021a), and long-term effects of the practice on practitioners (Fergusson et al., 2020).

The second phase of the research program consists of: peri-pandemic qualitative and quantitative research associated with the practice of Transcendental Meditation, health and school performance during home isolation (Fergusson et al., 2022b; in review A) and a proto-theoretical model of stress, the stress response, and psychosocial measures of cognitive, affective and conative outcomes from students practicing Transcendental Meditation at a synchronized time at the beginning and end of the school day by indigenous children during home isolation in a high-Andean regional city (Fergusson et al., 2023).

Separate post-pandemic qualitative and quantitative research examined the impact of Transcendental Meditation on orphan well-being (Fergusson et al., 2023), and a large-scale study of the DASS-21 with 809 students at two schools explored depression, anxiety, and stress in upper primary-age school children. This research considers how these levels compared to other children in Latin America, whether these levels were different when covaried for school, age, gender, and grade level, and whether there was anything to indicate whether depression, anxiety or stress was lower when children practice Transcendental Meditation (Fergusson et al., in review B). The present case study at Hogar de Niñas Virgen de Fatima de Chejoña contributes further insight into this post-pandemic topic.

Inferences and conclusions about HNVFC can be derived from the findings of the three research modules, which together provide preliminary evidence of the before- and after-influence of Transcendental Meditation on orphanhood. Perhaps the most telling can be seen
in the girls’ reports in research module one of feeling “less sad, just more thoughtful,” “more peaceful, with less resentment,” and “less sad…no longer depressed” as a result of Transcendental Meditation. The findings are particularly relevant when we triangulate these statements with those of their carers who said, “Meditation improved the girls’ emotional well-being and they remain calmer” and “The girls are calmer; it helped them to a large extent eliminate stress, and their emotional state is better.”

These self-reported feelings and observations from carers are supported by the findings of research module two which found girls reported improved physical, cognitive, and emotional health and doing better in school because of practicing Transcendental Meditation. The findings of research module two are compelling in that they are consistent with outcomes reported in earlier research from five other Peruvian schools, some of which also featured high-Andean settings and involved students of a similar age, grade level, and indigenous heritage. Research module three suggests that orphan girls have higher levels of depression, anxiety, and stress compared to “healthy” peers in Chile but carers do not deviate significantly from comparison to adults in Lima and the United States.

The research modules have limitations. The first asked girls to reflect on their experiences before and after learning Transcendental Meditation and asked carers to reflect on their observations of these experiences. We acknowledge such an approach is prone to participant reactivity and girls and carers may have moved away from their normal routine to answer questions and thereby adjusted their responses based on what they believed the researchers expected. However, given the short and structured nature of these interviews, reactivity is thought unlikely. Further, in qualitative research, the issue of reactivity moves from being a problem which needs to be minimized or eliminated entirely (as in the traditional positivist’s view) to recognizing and acknowledging possible reactivity and accounting for it. Such a view embraces the more recent “reactivity transparent” approach advocated by Zahle (2023) and recognizes that interview participants do indeed take

Time out to do the interview and respond to the researcher’s questions and prompts. [But] these sorts of influences on the research participants are part and parcel of the successful application of the method and, in this sense, they are regularly intended effects of their employment and do not exemplify reactivity (p. 6).

Memory of experience is also a potential flaw in the preliminary results from research module one. However, the researchers were careful to invite reflection not interrogate interviewees who, in a safe space, always remained in control of the process. During the short interviews, the four girls and four carers seemed relaxed and unencumbered by the process.

The design of research module two rests on its systematized application and analysis of the vernacular instrument. This instrument has been used in more than 20 schools over the last ten years and has yielded consistent data. However, an in-depth psychometric factor analysis of the instrument with data from 1,200 students is presently being carried out in the U.S. and refinements to its structure may result in future applications. Research module three also used a standardized test instrument and the results from HNVFC and comparative data are considered reliable and valid.

We also note that any thorough investigation of adolescent girls of this type is inextricably linked to notions of maturity and agency, and any focus on girls without proper consideration of their position vis-à-vis other social factors such as peers, family, carers, or institutions, will likely fail the test of presenting a full picture of health and its relation to Transcendental
Meditation at HNVFC. But ours is not an attempt at full understanding; rather it is a “first-pass” attempt to explore and understand mental and physical health in a remote residential care community, high on the Andean Altiplano, where the introduction of a practice like Transcendental Meditation is atypical of orphanages in most countries and can be considered rare.

In these ways, we have tried to resist the temptation to “freeze, truncate, and reduce ‘vibrant complexity’ into variables and disassembled elements” (Sobe, 2018, p. 333) and stay focused on discovery and learning. The mixed methods research module structure employed in this case study lends itself to this tendency.

Therefore, while we acknowledge that the findings from each research module are limited in their inferential value, taken together they begin to paint a picture of an emerging phenomenon associated with the benefits of introducing Transcendental Meditation to orphan girls and their carers. These findings and this conclusion are consistent with other studies on the phenomenon in Perú, and also more broadly with findings from other research on children and adolescents in other parts of the world using both qualitative and quantitative methods. The phenomenon of orphanhood and Transcendental Meditation therefore warrants further consideration. Clearly, subsequent research, which is planned for both Perú in general and HNVFC specifically, could validate these initial findings and provide other learnings and insights into this phenomenon.

Conflicts of Interest. The authors declare no conflicts of interest.
References


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