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Quiet Time- A School Program Based on Meditation for Promoting Well-Being in Children: Results from a Controlled Investigation

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Abstract: Various investigations have applied meditation protocols in the school context, with beneficial effects. Transcendental meditation, however, received little attention in primary school settings and few controlled studies are available. The present study is aimed: 1) to investigate the implementation of a school protocol (Quiet Time-QT) based on Transcendental Meditation ™ in a primary school setting 2) to test its efficacy in promoting strengths and resilience in children, using a controlled research, with a cross over design. 92 students attending fourth and fifth class of a primary school were assigned to either the QT intervention, or to a waiting list condition. Children assigned to the waiting list received the QT protocol after few months. Before and after the intervention children were evaluated by their teachers using the Strengths and Difficulties Questionnaire (SDQ) and the Devereux Student Strengths Assessment (DESSA). A Repeated Measures MANOVA was applied to compare the two groups. After the QT intervention children in the experimental condition showed fewer emotional and behavioral difficulties (SDQ) compared to children in the waiting list. An overall positive effect of QT was observed in the total sample in improving children's strengths and emotional well-being. Participants enjoyed the practice of meditation in the school setting. Conclusions: the results of this controlled investigation showed that the QT school protocol is feasible in the school setting, and it yielded improvements in children's strengths and well-being. Meditation programs could be easily included in the educational system to sustain children positive development.

Keywords: *Meditation, positive education, positive emotions, school children, wellbeing.*

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Introduction

According to the literature, meditation is defined as a mental training, by which a connection between body, mind and spirit can be created (Sampaio et al., 2017). The origins of the meditation techniques derive from some religious and spiritual practices, but now they are applied in clinical and educational settings without these components (Simkin & Black, 2014). Over recent years, there has been an amplified interest in meditation interventions, as a way to decrease stress and to increase psychological functioning. Meditation is included among alternative and complementary interventions for health, and it is based on the awareness of present mental state processes and a control of attention (Sampaio et al., 2017).

In the literature, we can find information about the application of meditation interventions for children and adolescents, even though these interventions are fewer than those developed for adults. In many countries the idea to introduce meditation in school is a consequence of the presence of significant stress in children, (for example, performance pressure and competition or problems in peer relationships) (Yoo et al., 2016), that exacerbated in the aftermath of the Covid-19 pandemic. These are risk factors for the early onset of mental health problems (i.e., anxiety or depression) in children.

The results of previous pilot investigations on the application of meditation in schools showed good results in relation to the feasibility and acceptability of meditation techniques with children and adolescents (Burke, 2010). Moreover,

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meditation displayed a good effect on anxiety, depression, behavioural symptoms and somatic functioning in elementary schoolchildren. Crescentini et al. (2016) focused their research on the effects of meditation on the well-being of children, and they have shown that this type of intervention can improve the emotional, social, and cognitive abilities of children. Even if further studies are required to confirm these results (Burke, 2010; Crescentini et al., 2016; Simkin & Black, 2014), they indicate that it is important to introduce the meditation practices in the educational settings, because of their potential effects also on the academic development of children.

A specific type of meditation is the transcendental meditation (TM), a technique derived from Indian culture, that provides a sense of relaxation, by stopping mental activity during the session (Simkin & Black, 2014; Travis & Pearson, 2000). The technique is practiced sitting with eyes closed and repeating a mantra, for 10-20 minutes each session depending on the age of the practitioner. The main aim of the TM is to reduce psychologic arousal and increase alertness (Simkin & Black, 2014). The few investigations available in literature showed that this specific type of meditation had a beneficial effect in primary school children, in particular in their levels of attention and cognitive development. Moreover, TM was associated with improved academic performance (Dixon et al., 2005; Warner, 2005). An interesting study by Grosswald et al. (2008) explored the effects of TM on symptoms of attention deficit hyperactivity disorder (ADHD). The results of this research showed a good feasibility of TM for children with ADHD. Furthermore, TM had a significant effect of reducing participants' anxiety and stress related ADHD symptoms within three months.

Although TM related research in children is still scarce, and trials have included only a limited number of participants, they provided promising beneficial effects. The aim of the present research is to evaluate the implementation of a TM intervention in the contest of primary schools and to evaluate its effects in terms of children's well-being and positive functioning. Compared to previous pilot research, this investigation contributes significantly to the field since it is a semi-randomized clinical trial (RCT), with a cross-over design, where a group of students who received a school protocol of TM (Quiet time -QT intervention) was compared to a waiting list group, who received the same protocol in a subsequent phase.

Methodology

Research Design

Semi-randomized controlled study, with a cross-over design: participants were allocated to the QT experimental condition or to the waiting list condition based on their class belonging.

Sample and Data Collection

This investigation is part of a larger European project (Fostering Resilience and Inclusive Education Non-Discrimination in School -FRIENDS) aimed at disseminating and replicating on a wider European scale an innovative whole-school approach known as Quiet Time based on the transcendental meditation program (Quiet Time/TM program) for schools. This scientifically proven approach has been implemented in four European countries (Portugal, Italy, Belgium, and the UK), targeting schools and non-formal educational institutions which have ethnic minorities/migrant and disadvantaged students. The present investigation will report the results obtained in a semi-randomized controlled trial performed in Italian elementary schools.

Various schools in Northern Italy were approached by members of the FRIENDS implementation team in order to present the Quiet Time Intervention (QT) to the school managers and to verify their willingness to participate. Authorization to develop the study was granted by the principal of the schools, following their interest in joining the FRIENDS project for the implementation of QT/TM program in their schools' classes. Subsequently, the project was presented to the teachers and to other staff members of the school, to the students, and to their respective parents, who authorized the participation and the collection of data for the research protocol associated with the project. Only those who voluntary accepted to participate and provided their written informed consent were included in the research protocol.

Out of the five schools approached, only one accepted to participate in the research project, which included the delivery of the QT protocol and the assessment pre-and post-intervention. A total of five classes (4 and 5th grade) were enrolled in the research project.

Three classes were assigned to the QT intervention, and they represent the experimental condition. The remaining two classes were assigned to the waiting list condition and received the QT in a subsequent phase (cross over design) (see Figure 1, Flowchart).

CONSORT 2010 Flow Diagram

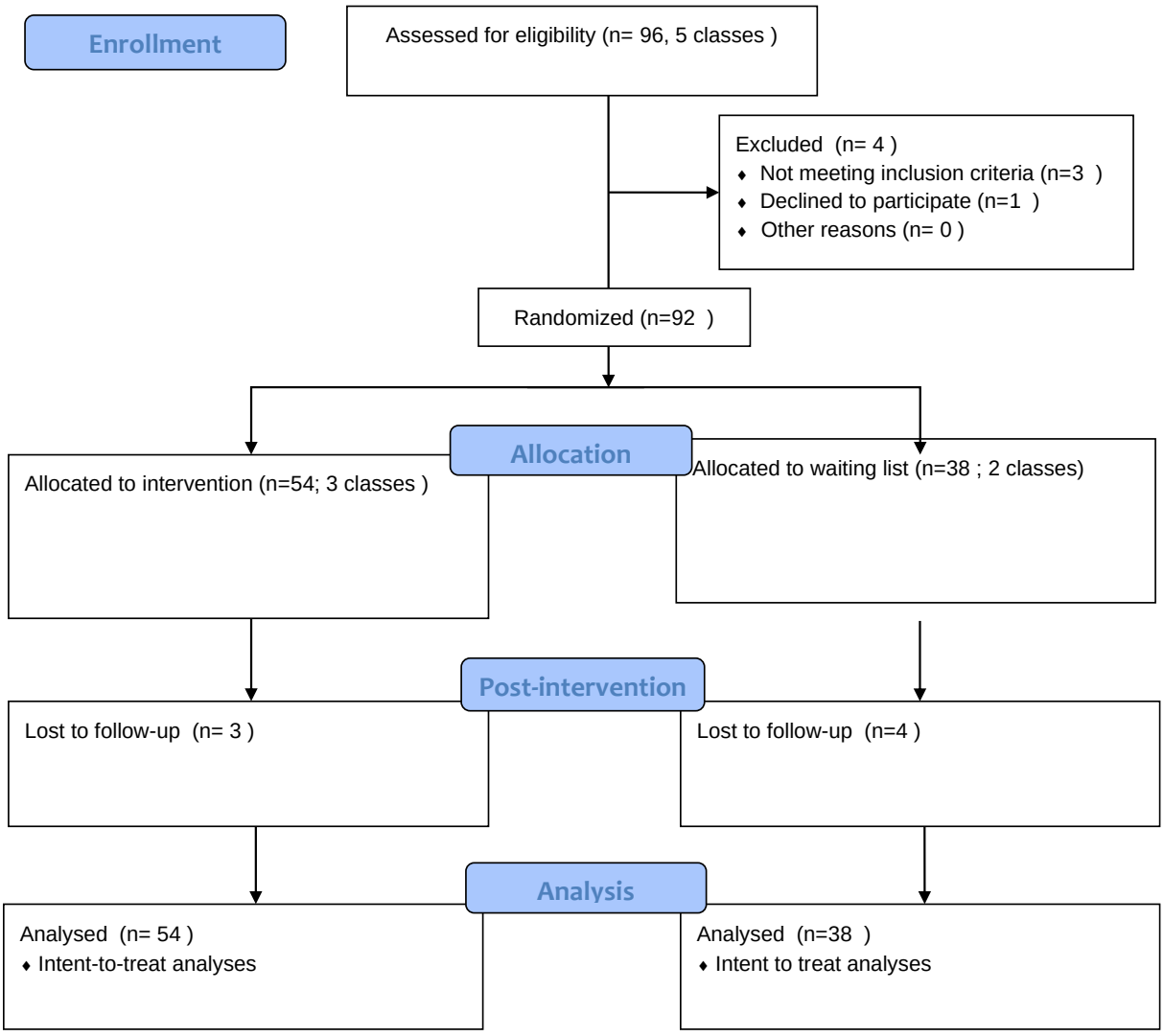

Figure 1. Study Flowchart

Quiet Time Intervention Protocol

The protocol performed in the school settings was developed using a sequential (3) phase format.

In the first phase, each participant learned what transcendental meditation is and how it works. Participants were individually trained by a certified TM teacher, who then organized small group meetings in order to help children to practice the meditation technique in a group setting. A specific session was dedicated to explain the mind-body connection to participants, how it can be influenced by meditation and its beneficial effect on stress. The initial phase lasted 4 days with sessions of 60-90 minutes of training.

In the second phase of the QT program, when schoolchildren had already learned to meditate, a 15 min group session of meditation was performed twice a day (at the beginning and at the end of the school day) in the class, with the presence of the curricula teacher during the first week.

Additionally, once a week (for four weeks) and then once every 14 days the TM teacher supervised schoolchildren during a 60 min group meeting, in order to address their problems and difficulties in the meditation procedures, for a total of 8 additional group meetings. In this phase the meetings were dedicated to answers to students' questions and problems about meditation and to explore possible applications of the QT in other settings (i.e., sport activities)

Finally, after 3 weeks from the beginning of the QT, each participant was individually supervised by the TM teacher, in order to verify his/her correct application of the TM techniques.

Assessment and Measures

The assessment was performed by schoolteachers who were familiar with the students who attended the QT program, and who were observing them during the mediation sessions. The observer-rated evaluation was performed 3 times: at baseline (T0), after the experimental group completed the QT intervention (T1) and after the waiting list group received the QT intervention (T2). In this latter case, only the 2 classes put in the waiting list received the T2 evaluation. The assessment was collected by a psychologist, who was blind to the class allocation. One teacher for each class completed the following questionnaires for evaluating each child's social emotional competences, personal strengths, and difficulties.

Devereux Student Strengths Assessment – Mini: For assessing changes in social-emotional competencies, the eight items of the Devereux Student Strengths Assessment Mini (DESSA Mini) created by LeBuffe, et al. (2018) were used. Items are formulated on a 5-point-Likert scale (from 1 = never to 5 = very frequently), e.g., "Speak about positive things?". The Italian version showed a good intern consistency, a satisfactory construct validity and a very high reliability of Cronbach's alpha α = .90 (Naglieri et al., 2014).

Strengths and Difficulties Questionnaire: The Strengths and Difficulties Questionnaire (SDQ) was originally created by Goodman (1997). The SDQ consists of five subscales named Emotional symptoms (5 items; e.g., "Many fears, easily scared"), Conduct problems (5 items; e.g., "Often lies or cheats"), Hyperactivity/inattention (5 items; e.g., "Think things out before acting"), Peer relationship problems (5 items; e.g., "Gets on better with adults than with other children") and Prosocial behavior (5 items; e.g., "Considerate of other people's feeling"). The response scale of the 25-item questionnaire ranges from "absolutely right" (1) to "not right" (3). The Italian version presents high validity and reliability as well as a high reliability of Cronbach's alpha ∝ = .73 (Tobia et al., 2011).

In this study, Cronbach's alpha coefficients were determined to verify that all scales were internally consistent (α > .70; Nunnally, 1978). All scales fitted the normality assumption and reached good reliability coefficients: for the Devereux Student Strengths Assessment α = .975 and for the Strengths and Difficulties Questionnaire α= .829

Analyzing of Data

Socio-demographic characteristics of the sample were calculated with t tests/ chi-square. Skewness and kurtosis values were calculated and indicated that the data satisfied the normality assumption for all the measures used.

In order to compare the effect of the QT intervention on experimental vs waiting list conditions, a repeated measure general linear model (GLM) was used, considering time and group assignment as fixed factors and DESSA and SDQ subscales as dependent variables. Significance is reported considering the time*group interaction effect.

After administering the QT intervention also to the two classes in the waiting list condition (cross-over design), participants were evaluated again, and results were analyzed with a general linear model (GLM) repeated measure design and post –hoc contrast analyses (T0-T1-T2).

The partial eta squared as a measure of effect size was calculated considering a value of 0.1 as a large effect, a value of 0.04 as a medium effect and a value of 0.01 as a small effect (Huberty, 2002). All statistical analyses were conducted using IBM SPSS Statistics version 25.

Findings / Results

Baseline Comparison and Socio-demographic Characteristics

The final sample included 92 students with the mean age of 9.70 (SD = .53) years, who attended primary school at the time of data collection. A total of five classes were included (three fifth and two fourth-grade classes). Three classes were selected for meditation, while two classes were assigned to the waiting list condition. 51.70 % of students were female, while 48.30 % were male.

Descriptive demographic statistics for the full sample as well as for both partial samples are shown in Table 1.

Table 1. Descriptive Statistics of the Sample

	Total sample (*N* = 92)			**Waiting List Group (*n* = 39)**			**QT Meditation Group (*n* = 54)**		
Variable	**Mean**	**SD**	**%**	**Mean**	**SD**	**%**	**Mean**	**SD**	**%**
Age	9.72	.52		9.74	.5o		9.69	.50	
Gender (F)			51.70			50.00			53.80

Study adherence

Of the 96 participants who completed the pre-program assessments, 7 did not complete the post-program assessments (See Intervention Flowchart, Figure 1). Three students in the classes assigned to the Quiet Time Intervention refused to

start the meditation and they remained in the class while their schoolmates were meditating. An intent-to-treat analysis was performed and missing data were replaced by mean scale scores.

Group Comparison

At baseline, QT group was larger (3 classes vs 2 classes waiting list) but it did not present significant differences in age or gender variables.

GLM - repeated measures, considering time*group allocation interaction effect, showed that there was a significant main effect ($F(7,84) = 10.762$; $p < .001$, $\eta p2 = .473$).

The univariate tests showed no significant effects on Dessa scores, but at SDQ subscales a significant decrease in 4 out of 8 subscales within the experimental group was observed (see Table 2), with a large effect size. The subscales of prosocial behavior and internal symptoms of the strengths and difficulties questionnaire showed no statistically significant differences between groups.

Table 2. Between Group Differences on Measures of Devereux Student Strengths Assessment and Strengths and Difficulties Questionnaire

	QT Group (Experimental) (*n* = 54)				**Waiting List Group (Control) (*n* = 39)**					
	Pre		**Post**		**Pre**		**Post**			
	M	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***F***	***Partial eta-squared***
DESSA	32.09	7.17	31.20	7.15	26.18	8.90	27.05	6.64	3.64	.039
SDQ Emotional Symptoms	2.45	2.62	1.54	1.87	1.26	1.37	2.42	2.03	26.58***	.228
SDQ Conduct Problems	1.88	2.53	1.56	2.49	1.39	2.09	2.26	2.55	19.81***	.180
SDQ Hyperactivity	2.72	3.49	2.19	3.27	3.02	3.04	3.95	2.97	22.19***	.196
SDQ Relationship Problems	1.20	1.70	1.00	1.59	1.26	1.34	2.21	1.64	19.18***	.176
SDQ Prosocial Behavior	7.62	2.03	7.31	2.13	7.24	2.13	7.10	2.55	.24	.003
SDQ Total Difficulties	8.26	8.86	6.28	7.36	6.95	6.66	10.84	7.17	46.40***	.340
SDQ Internal Symptoms	3.65	3.81	2.53	2.88	4.42	4.87	4.63	3.11	2.93	.032
SDQ External Symptoms	4.61	5.81	3.74	5.57	4.42	4.87	6.21	5.20	31.04***	.256

***p < .001; **p < .01; *p < .05.

The trajectory of changes in the waiting list condition was evaluated with a repeated measure procedure (baseline T0, T1 and T2) with post-hoc contrast analysis. The GLM repeated measures with the follow-up scores showed a significant main effect of time ($F\ 13,25 = 4.573$, $p<0.001$, $\eta p2 = .704$). Univariate tests showed a significant effect of time on the SDQ subscale of emotional symptoms, conduct problems, hyperactivity, relationship problems, externalization symptoms and total score. At contrast analyses, all the significant differences emerged between baseline (T0) and T1 assessment. After receiving the QT protocol, thus, children maintained stable levels of symptoms and well-being (see Table 3)

Table 3. The trajectory of changes in the waiting list group, after receiving the QT protocol

	Waiting list (*n* = 38)							
	T0		**T1**		**T2**			**Partial eta-squared**
	M	**SD**	**M**	**SD**	**M**	**SD**	**F**	
DESSA	26.18	8.90	27.05	6.64	28.45	6.76	2.90	.073
Emotional Symptoms	1.26	1.37	2.42 °	2.03	2.56	2.22	8.79***	.192
Conduct Problems	1.39	2.09	2.26 °	2.55	2.40	2.21	6.23**	.144

Table 3. Continued

	Waiting list (*n* = 38)							
	T0		T1		T2			Partial eta-squared
	M	SD	M	SD	M	SD	F	
Hyperactivity/Inattention	3.02	3.04	3.95 °	2.97	3.83	2.40	3.52*	.087
Relationship Problems	1.26	1.34	2.21 °	1.64	1.98	1.99	6.65**	.152
Prosocial Behavior	7.24	2.13	7.10	2.55	7.29	2.10	.19	.005
Total Difficulties	6.95	6.66	10.84 °	7.17	10.77	6.63	11.29***	.234
Internal Symptoms	4.42	4.87	4.63	3.11	4.53	3.48	.04	.001
External Symptoms	4.42	4.87	6.21 °	5.20	6.24	4.21	6.33**	.146

***p < .001; **p < .01; *p < .05; ° significant differences at contrast analysis between T0 and T1

Discussion

The present study aimed to examine the effects of transcendental meditation on the well-being, social-interpersonal functioning as well as emotional competencies of students attending fourth and fifth classes of a primary school, by using a semi-randomized controlled trial design. Students who participated in the QT program benefited from the meditation by decreasing their scores on Emotional symptoms, Conduct Problems, Hyperactivity/Inattention, Total Difficulties, External Symptoms and Relationship Problems, when compared to students assigned to the waiting list. These beneficial effects were directly observed and reported by their curricula teachers, using DESSA and SDQ inventories. These are widely used instruments for evaluating extra-curricula skills of students, that provide a reliable assessment of social, emotional and behavioral functioning of students. Thus, the beneficial effects of the QT on students' overall well-being and interpersonal functioning were detected and reported by reliable observer-rated measurements, which overcome the possible bias of a self-rated questionnaire.

A review of the applications of meditative techniques in schools documented that transcendental meditation is a natural mental technique, which offers numerous advantages to the participants (Wisner et al., 2010). First of all, it is a very simple and effortless way of letting the mind settle down into an extremely calm and wise state of rest. Best effects are produced with regular practice of two times twenty minutes a day. Secondly, throughout the practicing of transcendental meditation, it was found that participants spontaneously produced inner calmness and a wiser vision of life, reducing irritability and aggression, increasing tolerance and ability to appreciate themselves and others (Wisner et al., 2010). Consequently, subjective behaviors may become naturally more harmonious, and interpersonal relationships became more cordial and fulfilling.

These helpful and well-being improving effects of transcendental meditation were also found in students attending a secondary school. After a one-year period of transcendental meditation practice, they showed an increased state of restful alertness and greater capacity for self-reflection, self-control, and flexibility, as well as improved academic performance (Rosaen & Benn, 2006). The state of restful alertness induced by meditation fostered the growth of social-emotional capacities in students. These beneficial effects of TM were replicated in the present study.

In line with previous research on the use of meditation in the treatment of attention deficit disorder with hyperactivity (Grosswald et al., 2008), also in the present study we observed an association between regular practice of meditation and a decrease in hyperactivity/inattention problems of children. Other findings related to mindfulness meditation also documented a reduction of attention problems as a consequence of practicing meditation (Crescentini et al., 2016). In addition, previous investigations confirmed the assumption that regular practice of meditation favored a positive interpersonal attitude (Hanley & Spates, 1978) and helped to improve satisfaction and quality of life (Rosenthal et al., 2011). A recent review of the literature (Kreplin et al., 2018) focused the beneficial effect of meditation on prosociality, and the researchers found that improvements were confirmed only for the dimensions of compassion and empathy. Moreover, RCT studies were of poor quality and only one on transcendental meditation was included in this review. Thus, the present study may provide an important contribution to this field of research. It documented that the practice of transcendental meditation yielded a reduction of emotional symptoms, conduct problems, behavioral difficulties, external symptoms and relationship problems, which can lead to positive changes in attitude as well as to improvements in children's well-being.

Furthermore, not only was meditation beneficial in improving children's well-being when compared to a waiting list condition, it was also beneficial to regulate the levels of emotional symptom and behavioral problems once the waiting list group received the protocol. Table 3 shows the changes over time (from baseline, to T1 to the post treatment assessment- T2) of the students who were assigned to the waiting list first, and then they received the QT intervention in a second phase. Initially, while in the waiting list condition, their levels of emotional symptoms, hyperactivity and conduct and relational problems increased, probably because of the negative effect of school stress over the course of the school year. However, after starting to meditate in class, their difficulties remained stable or even improved by the end of the school year (see table 3). Notably, the end of the school year is characterized by final tests and exams, with high risk for school stress and anxiety. The meditation practice may have had a buffering effect in dealing with this

stress, in line with a robust body of research that sustains the positive effects of contemplation practice in educational settings (Shapiro et al., 2015). Creating positive environments for children was found to be a crucial requirement for fostering their resilience, and teachers may act as facilitators in this process (Twum-Antwi et al., 2020).

Conclusions

This study offers an important contribution to the literature on school intervention for promoting well-being in the school setting. It documented, with an evidence-based approach, that a short, simple, and well-structured program of meditation performed in classes had positive effects on the social-emotional competences of young students attending a primary school. Even though transcendental meditation has a large application in various settings (from clinical samples to psychosomatic medicine, to prisons or stressful work settings (Alexander et al., 1994, 2003), very few existing investigations applied this technique in young children. The present study, thus, shows that transcendental meditation appears to have the potential to enhance well-being by reducing difficulties in personal and interpersonal domains in elementary school children. Moreover, the present investigation has a valid research design, with a waiting list condition who received the program in a second phase.

Recommendations

For future research, it is important to extend the research knowledge and to encourage additional rigorous empirical studies that will replicate the current findings and test the benefits of meditation as a school-based intervention for children, targeting both the individual and the school climate. It is also recommended that policymakers and practitioners further contribute to this field of research by implementing contemplative practices in various educational settings (Shapiro et al., 2015), including the most disadvantaged ones. In this way, the current research would also be able to identify the most appropriate meditation practice for a specific population and/or for addressing a specific domain (relaxation, attention, empathy, self-regulation, etc.).

Overall, it can be summarized that the present study documented the beneficial influences of transcendental meditation on the behavioral and emotional functioning of students attending primary school, by using a RCT design. The present study thus makes an important contribution to research in the field of transcendental meditation by proving how it can be feasible in the primary school context and how much the students could benefit from it.

Limitations

Although the study provides evidence for the beneficial effect of meditation on the emotional and behavioral functioning of students, nevertheless it contains some limitations, which need to be taken into consideration for future research. One limitation of this study concerns the sample size, which has only a limited representativeness also because no ethnic minorities or other special populations were included. Additionally, the randomization was performed on class belonging, not on single individuals. Another limitation could be referred to evaluation, which consisted only in observer-rated methods (teachers' assessment of their students). Neither the parents nor the students themselves were directly involved in the evaluation procedures. However, the sole source of information provided by teachers may reduce the probability of biases and misinformation due to the young age of the students.

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Authorship Contribution Statement

Ruini and Vescovelli: Conceptualization, design, statistical analysis, drafting manuscript, writing, final approval. Maset: Concept and design, data acquisition, securing funding, admin, technical or material support. Facchini: Data analysis/interpretation

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