



Meditation Practice Effects in Subjects with Autistic Spectrum Disorder

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Abstract

Introduction

The objective of this study is to show the benefits of Meditation practice for young people with Autistic Spectrum Disorder.

Method

The intervention study lasted for nine months, including two cycles, one of 8 weeks, and one of 4 months. Participants (n = 8; male = 7, female = 1) with average age of 21.5 years old (SD = 4.37). During both cycles, a weekly session of Meditation, which consisted of Mindfulness and Mantras exercises, was conducted in the center's classroom, where the sample was following an administrative course. The participants were all invited to practice at home the different exercises when waking up and before sleeping for approximately 15 minutes. At the end of both cycles, we conducted semi-structured qualitative interviews with each participant, one of their closest family members, and their staff members from the center. Field notes were written at the end of each session.

Results

Five out of the eight participants practiced at home, the practice became part of a habit for them. Those were the most susceptible to show results in stress and anxiety reduction, an increase in focuses, better emotional control, more pro-social behavior at home, and in the classroom.

Discussion

We assume that family interest in the practice had an impact on the adherence of the participant to the program and consequence in better results. The participants who adopted our program as part

of their daily life routine have shown results in a reduction of stress and anxiety and a better focus, prosocial improvements in the class environment, and better communication at home with family members.

Keywords: ASD; Autism; Mantras; Meditation; Mindfulness

Introduction

Have you ever wondered how Meditation, as a Body-Mind technic, could improve mental health and well-being in general? Practicing it does not require being isolated on a Tibetan mountain while repeating mantras for 8 hours per day. A daily practice of approximately 15 minutes can already show benefits after some weeks. This already has been stated in several recent studies for the mainstream population, like with the Mindfulness-Based Stress Reduction (MBSR) program (Kabat-Zinn et al., 1985). We want to show you how it can also help in several dimensions, bio-psycho-social, for neuroatypical people with a qualitative study we conducted with young adults with Autistic Spectrum Disorder.

Researches about meditation and people with Autistic Spectrum Disorder are in their way of development, and there are not many qualitative studies realized on this thematic. The few most recent studies prove the importance to keep studying this field of research, as the benefices of meditation and mindfulness are highly related to the consequences of Autism Spectrum Disorders which are related to stress and difficulties with emotional control (Pentz & Simkin, 2017; Ahmed & Sequeira, 2012).

To determine the effect of Meditation practice on young adults with Autistic Spectrum Disorder at a general level, on their global lifestyle and behavior, with their classmates, teachers, and their families, we conducted weekly sessions of Meditation during the first two months cycle and a second four months cycle after a

summer break, while motivating and guiding our participants to practice at home for 15 minutes per day.

The meditation exercises we used were related to mindfulness but also mantra meditation. Qualitative semi-structured interviews were conducted with our 8 participants, parents, and educators from the center at the end of each cycle to listen to all kinds of feedback and potential changes.

We noticed benefices related to anxiety and stress reduction, an increase in focus, and prosocial behavior, mainly for the participant who adopted it as part of their routine. The various points of view, from the family, staff members of the center, and the participants themselves globally, present a progressive and positive evolution all the long of the two cycles. The adherence to the practice, favored by family encouragement, as part of a life habit observed during the second cycle showed more positive feedback in general.

Method

Design

To understand what the effects of a Meditation program were on Young people with ASD, individual semi-structured interviews were conducted two times, after an eight weeks cycle at the end of June/beginning of July 2020 and after a four months cycle in December 2020/January 2021, with eight participants, one family member for each, seven staff members of the institution mostly teachers and one of their classmates without ASD. All semi-structured interviews, conducted face-to-face with the participants, classmates, and staff members and sometimes by phone with the family, were subtly analyzed with fieldnotes interviews made after each weekly meditation in the center, which constitute the base of our program; every participant was encouraged to practice at home once or twice when they wake up and/or before they go to sleep, for 15 minutes.

Participants

Participants included eight young people with ASD, between 19 and 32 years old. They all follow an administrative course in a specialized portuguese institution, called APPDA (Associação Portuguesa para as Perturbações do Desenvolvimento e Autismo de Coimbra/ Portuguese Association for Developmental Disorders and Autism of Coimbra). Only one of the participants is a female, 6 of the participants have other diagnostics associated with Intellectual Disability or late development, two participants have been described as having behavioral problems by the center psychologist, and the female participant has shyness issues. The institution's psychologist proposed that we work with this class after we presented our project.

Interviewer

After writing six different designs, one per group (Participant, Family member, and Staff member) and one for each cycle. Each interview was designed following the recommendations of Steinar Kvale (1996) and Michael Quinn Patton (2001); they are all semi-structured, with open questions that allowed us to obtain as

much feedback as possible. Most of the interviews were made face-to-face in the 1st cycle; in the 2nd, they were all made by phone interviews with the family members. All interviews were recorded and taped on the computer. In total, 43 interviews were realized for the entire study. All interviews were conducted by the same researcher (Master's degree student) in the Portuguese language, and his thesis tutor helped to review the outcomes and later traduced to the English language for publication.

Procedure

All the participants were from the same classroom of the institution; they volunteered to be part of the program. Once a week, in their classroom, on Wednesday morning, was conducted a 1-hour session consisting of exercises related to Mindfulness Meditation and Mantra Meditation. The exercises were the following: Attention on breathing, description of an image, «ball of light» visualisation, mantras, pranayama, and attention on one candle. They were invited to practice at home after they woke up and before going to sleep for 15 minutes. The first cycle happened in May-June 2020, and the second after the summer break, from September 2020 to January 2021. Through semi-structured interviews, participants were questioned about their feelings related to the practice; we collected as much diverse feedback as possible. Also, the fieldnotes allowed a better understanding of potential evolution weeks per week. The interviews also made with the families and the staff member of the institution allowed a significant point of view of eventual evolution thanks to the variety of the feedback. During the second cycle, we compared the progress of our participant group with another class of the institution that also started practicing meditation.

Analysis

All interviews were recorded and then listened several times to be transcribed and typed on a computer. Then, they were read several times to be coded. All the essential quotes and keywords judged meaningful were highlighted. Those codes were then grouped into different categories, sometimes subcategories. This classification allowed us to analyze easier, in an organized way, each group of interviewees (Participants, Families, and Staff members) for each cycle (1st and 2nd).

Results

The results come from a global analysis of all the interviews of the two cycles and the fieldnotes analysis after each session. The participants who followed the advice to practice at home, besides the weekly training in the center, obtained better results. Five of the eight participants followed this advice.

Adherence to the program

The adherence to the practice by the participants, which became increasingly important all the long of the two cycles, is considered a result of a good appreciation of the practice as well as a consciousness of the usefulness of practicing meditation for themselves.

After the **1st cycle**, three participants revealed that they at least tried to practice at home, which is the case of D.S., who practiced “daily,” “before going to bed,” also M.M. “sometimes,” “at night,” and F.D. “once” and said: “I will continue.” D.S. and F.D. both told us that they use the practice when they feel stress “I stop and do meditation.”

The mother of M.M. told us that she “talked about it and liked it a lot” and said that “she was feeling good and would like to continue.” The psychologist said about M.M. that “she likes meditation a lot” and “adhered very well” and even tries “to defend meditation against her colleagues’ opinion” she believes that “if she recognizes the benefit, she will do it autonomously, without any doubt.”

The mother of J.D. told us, “he said he had meditation,” “he was showing everything,” during the “family lunch.” He seemed “extremely happy” about the practice and “reacted very well.” J.D. described to her the “very agitated colleagues” and how he also “tries to transmit to them” the practice. The psychologist realized how involved J.D. was when he saw that he was in contradiction with his best friend in the class, T.M., about the practice “He identifies a lot with T.M., for the first time he alerts T.M. to join the meditation,” “it surprises me a lot,” “one of the first times I saw J. receptive, and it contradicts to T’s opinion.” she explained it by the fact that the “familiarization phase is already overpassed,” it was not totally new” and it could be that “results come faster” because her mother is doing relaxation techniques with him.

For the teacher 1, “F.D. gives more feedback” about the practice “V.L. a little bit,” in general, participants “showed motivation to us, to their parents,” “they ended up reporting at home what they had done,” “a lot spoke about it.” For the psychologist “they all opened up to the initiative in a very positive way” and told us how “Wednesday meditation is already part of the routine.”

The three participants who already practiced at home during the 1st cycle continued their practice during the **2nd cycle** as well. Two more participants started to practice regularly.

F.D. indeed managed to continue his practice, which became from once during the 1st cycle to “almost every day” during the 2nd cycle. He told us, “I practice in the shower,” specifying his preference for the “mantras” exercises and how it was important for him to continue it “I like it,” “meditation helps me,” and “it is requested” he seemed a bit worried that the cycle was ending, “are we finishing the meditation? is it true?”, “Professor P. will continue, won’t he?” but he told us, “I will continue to do it.” His father confirmed to us how much he likes it “there are other things that he likes also, but meditation is something that is good to him” he confirmed to us his practice “in the shower.” The psychologist told us that “F. also uses to speak about it” and is using it.

The same as M.M., who gave us a similar answer for the 1st cycle “sometimes,” “at night before I go to bed,” “I do a little breathing exercise,” and “the exercise of the ball of the light.” Her

mother confirmed that she kept practicing “from time to time” also, she and M.M. “have a group with whom (they) do meditation.”

D.S. told us that he was continuing practicing on the same as for the first cycle, and his daily practice was “going well” also, he told us about an extra practice that he was doing “on the train” before coming here.

T.V. started to practice at home during the 2nd cycle; as his father said, “once in a while, he does,” “when it’s too noisy,” and “sometimes he closes his eyes.” His father thinks it is “one of the most incredible things about him,” “every day, I can’t say,” but “I saw him do it several times” and said that the program “has worked yes,” “it has been used, yes.” T.V. started speaking about this to his family “talks to his cousins” he told them, “I’m meditating,” and his father said “he is not very expressive,” which gives even more value to the small conversation he had about this with his cousins. The teacher A. explained how he is doing it “T. really stays..., and closes his eyes, stays, puts his hands on knees, stays there, with a serenity and with a calm”, and thanks to it, he is “very calm and then his evolution over time, it’s very good, it’s very good.” The psychologist told us, “T. is the one who talks very often (about meditation)”, and “he is one of the participants who very often use meditation these days.”

From his mother’s feedback, J.D. started to practice at home; his mother described also relaxation exercises, not only meditation, he “takes a break,” “put on some calm jazz music,” “with his eyes closed,” “for a while and it does him well,” she described it as “his own meditation,” “other times he goes to his room.” The mother of J.D. told us that “he used to speak a lot about meditation,” and “even sometimes he tells me “I need to be in my room, I will meditate.” He even taught some exercises to her “who explained to me was you, was J.”

Wednesday morning is associated with the practice; the teacher A. gave us one example of “one Wednesday, and you arrived (...) I was starting to give the class and them “no, no, no, no, no! We can’t start the class because we have meditation.” She also said that “some started to do meditation when they are waiting” particularly F.D., T.V., M.M. and D.S. “for example F., T.”, “M., D. also”, “mainly those four” and “mostly T.”, “T. does a lot of meditation”, he is explicitly saying it “so I’m going to do a little bit of meditation”. She said that “they created it as a habit”. The group is using it in some break moments “curiously, and in the moments of pause, for example, they are doing an exercise”. The psychologist said: “some say that when they are anxious, those are the ones who say they will meditate”, they are now “used to talk about it”. She says how it becomes part of the routine “it is something that they have been using frequently in their day, this yes” and they are used to doing it when they feel they need it “has been working as a tool for them”, it is “important for their daily life”, it “helps them to stabilize”, and “without them having to ask help to other people”, definitely, “meditation is already part of their daily life” and “it is very positive”.

Sensation of well-being

Globally, most parts of participants told us that they were feeling “good” during the sessions.

After the **1st cycle**, F.D. described being “completely relaxed at the end, “and R.S., “during the day, way better. “ M.M. felt “stable,” “balanced,” feels her body “relaxed,” with a more accurate description of feeling “warmness in the chest” during the exercises, which helped her to “feel better” in general.

At the end of the **2nd cycle**, this feeling of warmness was also felt by F.D. “nice feeling of warmth,” who, thanks to the practice, felt “way calmer” and “more relaxed.” Feeling relaxed at a body level was something that came up often for our participants “I feel more relaxed” V.L.

Anxiety and stress reduction

Feeling “calmer” came up very often as feedback, the interviewees associated it with reduces of stress and anxiety.

After the **1st cycle**, two participants, D.S. and F.D. told us that when they feel stressed, they started to use meditation as a tool, “I stop and do meditation” (D.S. and F.D.), which helped to feel “less stress” D.S. in their daily life. F.D. said that by not thinking “about other things” during the practice, he could “reduce(s) his stress.”

The teacher 2 told us about the impatience “they can’t wait” of the participants that could be the consequences of “some anxiety” he describes it as their “natural anxiety.” The teacher 3 described the stress of the class of mainly two participants. “V.L. is very anxious; he asks the same question 100 times,” and J.Q. “is a bit stressed sometimes.” For the technical motors, the anxiety of some elements “infects others.” The participants “are very anxious” for the psychologist because they have “many questions about the future.” The teacher 3 told us that J.Q. “has panic anxiety,” sometimes because of his “stress” and “anxiety,” “he is too “nervous” until he “breaks (his) pencil,” and this more “happens with tests,” which he has “difficulty in explaining,” he “blocks,” and “cannot react.” Thanks to the practice, the technical motors told us that he is a “little bit more confident,” he “does not get so nervous about finishing things,” “I also find him even calmer,” and “much less anxious.” The teacher 1 told us that “V.(L.) is calmer in general,” the teacher 3 told us the same “V. is calmer” as for the technical motor, “the one who changed the most,” “immense difference,” “especially V.,” “he really changed a lot,” she showed some concrete changes, “in the classroom he has not so much anxiety,” compared to before “previously spoke much more, very repetitive.” Now it is “more control.” The teacher 1 noted “the calmness settles in” right after the session; she noted an “obvious immediate effect”, and a “difference between before and after,” they are more “appeased.” The technical motors observed them “quite agitated before the session and very stressed,” with a change “after the session they were fantastic” and that “in general they are calmer.”

Describing their kids (or sibling) as “calmer” is the feedback that came up the most from the family members. The sister of J.Q.

told us that he was “calmer than he was,” and his “nervousness has diminished these last few weeks.” The mother of J.D. gave us various feedback about it; his son was “much calmer”. She insisted on showing that was she was saying was true “soooo calmer, but this is true! What am I saying ! (...) every time he had meditation, he was calmer (...) when he arrived home, the day he has meditation, he is extremely relaxed”. The mother of R.S. said that he is “calmer from one month” and “it could be” thanks to the practice since everything else in “the routine is all normal” only “meditation is the only recent novelty.” The mother of M.M. also noted some positive effects “(she) started to be a little more agitated and now she is well,” she is “calmer” and also “takes less (medication),” she said that “now she is more agitated, more anxious” and that “doing meditation at this time helped, to be calmer.”

At the end of the **2nd cycle**, J.Q., like for the first cycle, reported his stress level reduction “I feel in a way, more relaxed,” and “sometimes I am unstressed.” Also, F.D. feels “much calmer” and “more relaxed” he shared that even if his stress “calmed down with meditation, really,” “meditation helps to relieve stress,” he still feels it “sometimes I have this behavior.” Even if “already improved,” he said that “it still needs to be improved.” M.M. have better control of her anxiety emotions. “I’m calmer,” and said, “I control more when I’m anxious.”

The mother of J.D. finds him “calmer when he is more stressed,” “he manages to control his anxieties and his stress well,” and in general, he “becomes calmer” and “much more relaxed.” She congratulated the program, “it was really good that you taught it.” The mother of V.L. thinks that this day (January), “he is in a really good phase” with “less anxiety” and that “now he has stabilized a lot in the association,” he is “more serene” and “calmer,” and “more thoughtful” even her “daughters noticed that he was calmer.” The feedback from the mother of R.S. is similar “he is calmer,” as well as from the mother of M.M. “yes, I think that she is calmer.”

From the only participant whom we couldn’t interview any family member, the psychologist told us that D.S. “has been going much better than in the initial phase when he came here” in “behavioral terms,” he is “much calmer,” and “much more controlled.” Speaking for the global staff team, she said, “we have noticed a reduction in anxiety behaviors,” “we have noticed many changes in him,” that “he is one of the young people that we have noticed the most change, without a doubt,” “on the positive side.”

Globally, the teacher A. observed that, in general, there is “less stress and anxiety” in the class,” more “calm,” and they were more “serene.”

Increase of focuses

In the context of the classroom, we observed a correlation between the global mood of the class and oneself ability to focus on this context.

Being focused on the classroom environment is a challenge for M.M., who explained to us after the **1st cycle** that the “classmates

laugh, distracted (her).” Still, recently also by being “less irritated” during the practice, her attitude toward it “is better.” This point of view is shared by F.D. and V.L., who are pointing out the classmates' attitudes who are “laughing,” this “noise” is an obstacle for V.L., who “can't concentrate.”

The teacher 1 described “many differences” and “two main groups,” “some more talkative” and some “stable” with “control of (their) impulsivity” and “others not.” The training coordinator also describes a “class with exceptional characteristics,” “very, very different behavior patterns,” as for the psychologist, a “very different group.” Those differences are not just about the participants but also day per day; the staff members noted some variations in the global mood “class behavior is not always the same,” says the training coordinator, similar to what teacher 3 said “very variable,” that each day the behavior is different “there are days that they are well and work well (...) there are days that they are calms”. The main challenge for the teacher 2 is the “difficulty in maintaining calm” because they are “a bit agitated.” The teacher 3 identified the reason for the class agitation by associating it with some participants’ “one or two agitated elements, F.D. and P.R. “then T.V. and V.L. are agitating the class.” And “these 4 have more difficulties in focuses” have an impact on the global mood of the class “when these elements are well they all work well.” The training coordinator spoke to us about “the unstable behavior of some of them” which provokes “some instability,” he described the general mood as a class who has difficulty to be stable “it is not a class that is properly stable,” this “depends a lot of the phases” and “depend of many factors.” The psychologist described the intervention in the class as a “challenge for us, teachers, to reach different people” in a “class of very immature young people.”

After the **2nd cycle**, D.S. told us he “feel(s) focused” during the practice. The teacher A. noticed “that he has been extremely focused” how he is “very focused,” he “always been a focused student,” “but now even more.”

J.Q. mentioned the ruminations of T.V. and said that when he was doing the exercises, those were reduced, “but when he is in meditation, he focuses a lot.” Also, his father related that T.V. was practicing at home and told us that he does it when it is “very noisy” and that he seems to be in “concentration.” The teacher A. “mainly” see effects on T.V. “on T., I see much evolution on T.,” about his ruminations “T. that makes much noise,” “they have decreased immensely” and “he is much more focused,” “even in terms of concentration,” “I notice that he is much more focuses” “he has a much, much better focus.”

The teacher A. said that F.D. was “way more focus” and also improved in “knowing how to behave,” and she associates it thanks with the meditation work “I think that with meditation we can work a lot on knowing how to behave.”

The teacher A considered the practice “very important” to know “how to behave in a classroom,” like “knowing how to wait calmly” she notices “that they have evolved a lot, a lot in this aspect,” and think that this practice help to “works our focuses.” The teacher A. described the behavior of participants as more disciplined, “knowing how to behave in the classroom,” “not

sitting on the side,” and “talking if I have lifted my finger.” And it helped them to learn better “even at the level of learning” they were “way more focus on the things.” She said that “the results are visible, I notice differences,” “they have improved a lot,” and “their sense of responsibility is also greater” by learning how “to pay attention.”

Pro-social behavior

We noted that communication was better and better all the long of the two cycles, and participants showed better signs of tolerance and patience between themselves in class and at home in their family context.

After the **1st cycle**, besides noticing that V.L. was calmer, his mother also said: “(he is) more sociable with me” and “talks more to me,” which before “was not a habit,” and currently it is “always improving,” she is not the only one in her family to observe positive effects, also the sisters of V.L. “my daughters noticed him calmer,” “it has been indescribable.”

The teacher 3 noticed that when she is “giving the class, they are much calmer,” “in the long term they had changed,” which resulted in “fewer conflicts” and “less tension between them.”

To relate the global class mood and the general classmates' relationships, M.M. said after the **2nd cycle**, “it leaves us more relaxed,” which, as we could observe when we were there, showed the diminution of conflicts and better communication and tolerance between them.

The psychologist said, “I don't know if this has to see with meditation,” but “they are way more relaxed,” and the “group spirit, (is) more developed, yes, without a doubt.” The teacher noted positive amelioration of some behaviors like a reduction of stereotypes behaviors “some stereotypes that they present that we have also been working with them,” “we noticed a reduction of this behaviors.” Also, “the group is much more in tune with each other,” there is an important reduction of conflicts, “these days [...] nothing much significative (about tension)”, “they were no one who is manifesting this (tension) more intensely these last few days.” The teacher A. described the class as “much more active” and being “more participative” globally “since May, June” (the time we started the program), “over time” she “noticed many changes,” participants “are way more pacifics” and “way more relaxed.” She believes that “meditation had brought some calm” into the class environment.

The mother of V.L. shared positive changes about his family relations “at home, he has much fun with his nephews,” which was not the case in the past “he didn't want invasions,” “sometimes he react(ed) very badly” he is now more patient with them “not so much lately (doesn't react badly)” she said that “we made two family lunches here at home and everything went well,” he has “more patience,” and “take things, more... in another way”. The sister of J.Q. “noticed that he started to talk more,” about his problems,” about the school,” “from one month or two,” “he is in a better mood.” The mother of R.S. told us that in the past, “he was always a very closed child” and “he was not talking much.” From

now, besides being “calmer,” “he changed, he changed a lot,” he is “more sociable,” “he talks more to people.” In the center, “he already created friendships in the class yes”.

Better control of emotions

Through the interviews and observing the participants, we noticed that some participants were struggling with controlling their own emotions, and some were subject to anxiety crises until they were unable to be with the rest of the group in the classroom.

At the end of the 1st cycle, the teacher 1 described some “Impulsivity” in the general behavior of the classroom, related to the “difficulty of managing one’s own emotions,” which are the “reason for conflicts in the class.”

It is challenging for M.M. to control her emotions; the teacher 3 described her as having “panic crises”, as we could see once at the beginning of one session, she “runs out of the room,” and this “happens punctually,” she “does not externalize” her emotions. The teacher 3 described her as someone “timid.” The teacher told us that she is a dancer and how “relaxed” she is when she dances and thought that “maybe it is the same with meditation.”

After the 2nd cycle, the mother of M.M. said that “she is a little bit impulsive” and “in some situations, she lacks self-control.” About the practice, she thinks that “it does her much good” and “that it is very positive” because it “increases (her) self-control” and helps her to control her impulsivity, “I think it is better.”

The psychologist also talked about the challenge for D.S. in controlling his emotions. Once, he even “punched” one of his classmates in the past. She told us that his current state “has been going much better” compared to the “the initial phase when he first came here,” now “in behavioral terms,” he is “very calmer” and “very more controlled.”

Discussion

According to our initial objectives, the purpose of our study is to observe from all kinds of different feedback potential changes in stress and anxiety reduction, focus increase, better emotional control, and changes in prosocial behaviors. Those observations were made at different levels that are all interrelated. One of the participants, a family member, and the staff members. Also, other colleagues’ opinions, fieldnotes analysis, and comparison with one other group gave us an even more global and significant point of view. The results we obtained will be discussed here all together because of their inter-relation and interdependence, which are from our initial idea that the individual need to be considered in his globality.

Findings

From the participants’ point of view, by conducting the interviews with them, we noticed that globally, the feelings and opinions about the practice are positive from the feedback given. They kept going in this promising direction; as we could see in the 2nd cycle, participants felt well during and after the session and

were motivated to continue the program. Also, the place of Mantras exercises was more and more appreciated by the group and appeared most of the time as the most liked exercise of the session. We suppose that this participated in better adherence to the program. The ones that had a better program adherence noted positive changes in themselves, particularly F.D., D.S., and J.D. Doing a self-analysis is a strenuous exercise for everyone. Therefore, external feedbacks were essential. Some participants gave us feedback about their colleagues, like J.Q., who had more facilities for describing the evolutions of others like M.M. or T.V. than his own.

Family members gave us differentiated feedback, particularly about how their children started using the practice at home and how it started to have positive effects, like stress and anxiety reduction mostly. Some have shown signs of pro-social behavior with their family members (parents, siblings, or cousins) by communicating more or having more patience with them. The feedback from the staff members varied a lot in the first cycle, sometimes in opposition to each other about potential changes observed. After the second cycle, the staff members interviewed gave more similar feedback about a good evolution of the group cohesion, the focus of the participant and individual changes like a better focus during tasks in the classroom, more patience, and better communication with their classmates.

The feedback from the families and staff members were satisfying in their evolution. Their external point of view about the participant are interrelated. Therefore, they must be discussed together. Because some staff members sometimes gave us feedbacks about what was happening at home for the participants, especially for D.S., with whom we didn’t conduct any family interviews. On the opposite, some family members had a point of view about what was happening in the classroom from their discussion with the participants. By crossing the feedback with the ones coming from the family members and the analysis of the interviews between each other, we can say that the study’s main findings are that the globality of the class integrated the practice as a routine, a habit, in their weekly rhythm.

The ones who made it more a pattern in their daily life were the most susceptible to present results of stress and anxiety reduction, in different contexts, in the center, the classroom with their colleagues and staff members, or at home with their family. Those stress and anxiety reduction can be correlated with changes in behavior. Those changes of behavior have an impact on the social aspect. Some participants have shown prosocial improvements with their colleagues, center staff, and family members. We noticed from the other feedback that five of the eight participants, M.M., T.V., D.S., F.D., and J.D., frequently used the practice in their daily routine. Those are also the ones who are more conscious about how the practice can help them in their global well-being and reported those effective changes. The interviews with their families, let’s suppose a correlation between how the parents feel concerned about the program and encourage their child on it and the practice of their child with potential changes observed by both sides, participants, families, and staff members. Also, all the family members interviewed of those participants who showed the better results were the ones who reported more stress and anxiety in their

daily life due to complicated family situations, like being a lonely mother, disease of a family member, work, or even having in charge a child with ASD. An extra participant not part of the sample gave us an additional and unique point of view; he confirmed the positive class mood evolution, particularly for the day of the practice, which shows one short-term result and how the program has benefited the group in general and especially for the participants already mentioned. Finally, the fieldnotes and the comparison with a second group proved the progress that was made in focus and focus endurance during the practice, the group adherence, and the Mantra technics improvements, which confirm that giving a more prominent place to this technic in the program was a challenge but also a right and beneficial choice. Those exercises and the participants' facility to do them were more and more critical all length of the program, progressive and regularly, session after session, months after month. At the end of the second cycle, we can say that our group participants for the study are not a beginner group anymore. The comparison with the second group also showed us the importance of global group cohesion in practice; if some participants are perturbing the session, it can affect the rest of the group, as was the case in both groups.

Strengths

The unicity of this study is her main strength. Unicity in different aspects, by the sample chosen, the practice used, the design, and the mode of research, which is qualitative, global, and large by considering many different points of view. We didn't find any study in our literature review which used a similar program. Also, from our literature, we just found one other study, the one of Black and Rosenthal (2015), which used a similar way to collect data based on qualitative interviews. Also, our openness during the interviews, to listen to all kinds of potential feedback, to know as much as we could about our participants is a strength in our objective to consider our public in their complex globality, with all the aspects of their daily life, personality, and feelings. Doing a program of this duration allows a better adherence to the practice, especially during the second cycle, and more autonomy for the participants. We suppose and hope that this strategy allowed to have an impact on the lifestyle of our sample in the long term for the future. The mix of technics that we used in our program, mindfulness, and mantras exercises, is a challenge and a strength because unique, we can consider our choice successful because of the results we obtained.

Comparison with revision of literature

Most researches made about this thematic are quantitative studies. However, the results are like the ones we obtained, about reduction of anxiety and stress, diminution of rumination for the participant who had, and an increase in prosocial behavior. The program we used is different from the others; we can describe it as a mix of mindfulness exercises and the use of mantra exercises. Our study can be defined as a mix of the study of Spek et al. (2013), who used specific mindfulness programs, and Black and Rosenthal (2015), who used a program based on mantra exercises. The one of Spek et al. (2013), which is a quantitative study, observed a reduction in *"depression, anxiety, and ruminations"* after nine weeks of Mindfulness-Based Training for adults with

ASD, and the one of Black and Rosenthal (2015), which is a qualitative study, with benefices in *"reduced stress and anxiety, and improved emotion and behavior regulation"* after a meditation program based on mantra exercises for individuals with ASD between 10 and 30 years old. Both methods used independently gave results. Thanks to our program, we saw that the two types of exercises we joined and used in inter-dependence also gave results. We describe this mix and plurality of exercises related to classic mindfulness in association with mantra technics as a strength because it is unique, and we didn't find any similar program in our literature research. For example, the study of Rosenblatt (2011) integrated a lot of body-mind technics into her program, including Meditation, Yoga, Music, and Dance. On the opposite, some studies like the one of Singh et al. (2011a) and (2011b) are focusing their attention on one specific type of meditation called *"Meditation on the Soles of the Feet"* to help adolescents with ASD and, more particularly Asperger syndrome to control their aggressive behavior. By using exercises based on mindfulness, we continue the work of several studies showing the therapeutic benefices of stress and anxiety reduction, and better mental and psychological well-being, like the study of Reibel et al. (2001), who used Mindfulness-Based Stress Reduction (MBSR), invented by Kabat-Zinn et al. (1985). By including those exercises and mantra technics, we constructed a complete Meditation program adapted to our public, thanks to the facility of this technic about focusing on internal and collective support, which is a sound and vibration, compared to essential mindfulness, where the focus on the breath, as only internal support, or visualizations, can be more complex and more abstract. Even if studies that compared Mindfulness with Mantra meditation like the one of Schoormans and Nyklicek (2011) didn't find significative differences in stress between the two programs, the qualitative study of Black and Rosenthal (2015) confirms our feelings that mantras *"do not emphasize the need to concentrate and control the mind, and the practitioners maintains alertness during meditation"* are an excellent didactic and method for our sample, compared to mindfulness which is sometimes compared to a kind of concentrative gymnastic, with analogy related to bodybuilding of the mind (André, 2018) that can be a powerful self-restraint for the practitioners (Hamard, 2013).

Meaning

The meaning of this study is significant because treating about two challenging thematic. The first one is about the practice of Meditation itself and how, nowadays, we should surpass the cartesian dualism of body and mind (Midol & Chenault, 2017) to have a positive therapeutic impact on the well-being of the persons. More than surpassing this idea, the challenge of doing a practice from oriental roots with an occidental population (Hamard, 2013) who do not have any background about it is meaningful and essential. Even if nowadays, mindfulness programs, like Mindfulness-Based Stress Reduction, are considered more and more seriously by the scientific community, programs that use and are based on mantra exercises are still regarded as folkloric and not as serious for the scientific, therapeutic, and clinical point of view. The second challenging aspect that shows the meaningfulness of our study is the clinical point of view about how Autistic Spectrum Disorder is perceived. We believe that having an inclusive point of view of people and considering them as people in *"handicap of*

situation” (from the French terminology “*handicap de situation*”) depends on how the society is ready to include them. People with ASD should not be considered as having a disease to cure but as being on a spectrum, which is a part of the person and different for everyone. And that our practice can be a catalyzer of their inclusion in society. Nevertheless, by considering our community as not inclusive enough, we should think of the practice of Meditation as a societal necessity for everyone else and at least as much for neurotypical people who also suffer stress and anxiety and have to develop their empathy, emotional intelligence, prosocial behavior to be more aware and open mind to everyone and especially in our case to non-neurotypical people.

Future studies

In future research, it would be interesting to compare if basic mindfulness exercises can have different results than mantras exercises and a mix of both by experimenting with the other activities in different groups and control groups. In our literature research, just one study made a similar comparison Schoormans and Nyklicek (2011) but did not find significant differences; more studies are needed on this objective. Another aspect interesting to develop and study about this thematic is some traits that are sometimes associated with people with ASD, like, for example, epilepsy and the benefices that could have meditation. Also, on the same idea, the rumination reduction should be more studied on a larger sample. Finally, as we saw in our literature review, from the study of Ferraioli and Harris (2012) and by interviewing them, families of children with ASD have a higher level of stress and anxiety. And a family adherence to a meditation program, like was experimented on the program of Bogel et al. (2008), by practicing meditation with adolescents with ASD and their parents can help the well-being of the family and help to improve oneself goals. About this last point, we noticed that the participants with whom we obtained fewer results are those with family members without any background in practice and a particular interest in this. We hypothesize that if those parents tried or started an introductory program about this practice, they would be more susceptible to encourage their child to practice it more frequently and therefore obtain better results. Our weekly encouragement to the participant for daily practice is not enough; this kind of program needs to be a global collaboration between participants, staff members, and family members.

Conclusion

The participant who adopted our program as part of their daily life routine has shown results in stress and anxiety reduction, better focus, prosocial improvements in the class environment, and better communication at home with family members. The various points of view, from the family, staff members of the center, and the participants themselves globally, present a progressive and positive evolution all the long of the two cycles. The feedback differences between the first and the second cycle are essential. The adherence to the practice as part of a life habit observed during the second cycle allowed more positive feedback about potential evolutions. We suppose that our results can be better if the adherence to the program is higher. We also hypothesize that this practice adherence is correlated to family encouragement. And once again, we suppose

that family encouragement can be higher if those family members start practicing as well.

Limitations (or challenges?)

It would be better to have more participants in our sample, to be more objective in our results, and the fact that we just have one female participant can be considered a weakness. From my point of view, by leading and analyzing the interviews and observing and reporting each session, I would say that the main weaknesses of this study are the difficulty in interpreting the results. It is difficult and a challenge to explore the finding we obtained because changes in mood and behavior of the participants can be due to many different factors, like emotional life, taking of medicine, or recent changes in the family situation. Therefore, the interpretation of the results depends on our subjectivity. Also, the feedbacks that were given between different staff members were sometimes in opposition to each other, and the feedback of the participants was sometimes in contradiction with the ones of their family members. The thematic chosen, by her complexity, modernity, novelty, and maybe strangeness for people that we interviewed who did not have previous experience from it can explain those contradictions in the different feedbacks given. This complexity appeared all long of our research, as a challenge to surpass, more than a limitation, which made the other observations and feedback obtained unlimited in their way to be analyzed and interpreted, which is the beautiful challenge of working with human beings in their whole globality, and complexity.

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