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HIGHER EDUCATION BASED ON NEUROEDUCATION AND POSITIVE PSYCHOLOGY: PERCEPTIONS FOR UNIVERSITY STUDENTS WITH AND WITHOUT ADHD

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Abstract. The phenomenological study explores the meanings given by university students with and without Attention Deficit Hyperactivity Disorder (ADHD) to their experience with teaching methodologies based on neuroeducation and positive psychology, 43 university students participate, 22 (15 girls and 7 boys) are diagnosed with ADHD; and 21 (15 girls and 6 boys) do not have this diagnosis. They are aged between 19 and 27 and come from various professional careers. A qualitative methodology is followed with a phenomenological approach using an interview prepared ad hoc and validated by experts. Young people have shared a training experience with teaching and learning strategies aimed at improving attention deficit within the framework of an inclusive education philosophy. The findings in both groups show that teaching strategies based on neuroeducation are perceived as tools for improving attention and positive psychology practices as an aid to generate a positive attitude and strengthen values. The results are discussed in relation to other studies that show the voices of students with educational needs in higher education. Also, with studies that point to the effectiveness and questioning of the strategies used.

Keywords: learning disabilities, higher education, neuroeducation, positive psychology, phenomenology

FORMACIÓN UNIVERSITARIA BASADA EN LA NEUROEDUCACIÓN Y LA PSICOLOGÍA POSITIVA: PERCEPCIONES DE JÓVENES CON Y SIN TDAH

Resumen. El estudio fenomenológico explora los significados dados por jóvenes universitarios con y sin Trastorno por Déficit de Atención e Hiperactividad (TDAH) a su experiencia con metodologías didácticas basadas en la neuroeducación y en la psicología positiva. Participan 43 estudiantes universitarios, 22 (15 chicas y 7 chicos) son diagnosticados con TDAH; y 21 (15 chicas y 6 chicos) no tienen este diagnóstico. Tienen edades comprendidas entre los 19 y 27 años y proceden de diversas carreras profesionales. Se sigue una metodología cualitativa con enfoque fenomenológico empleando una entrevista elaborada *ad hoc* y validada por expertos/as. Los jóvenes han compartido una experiencia formativa con estrategias de enseñanza y aprendizaje orientadas a la mejora del déficit de atención en el marco de una filosofía de educación inclusiva. Los hallazgos en ambos grupos muestran que las estrategias de enseñanza basadas en la neuroeducación son percibidas como herramientas de mejora de la atención y las prácticas de psicología positiva como una ayuda para generar una actitud positiva y fortalecer valores. Los resultados se discuten en relación con otros estudios que muestran las voces de estudiantes con necesidades educativas en la formación universitaria. También con estudios que apuntan a la efectividad y al cuestionamiento de las estrategias utilizadas.

Palabras clave: Dificultades de aprendizaje, educación superior, neuroeducación, psicología positiva, fenomenología.

Introduction

The nature of higher education imposes teaching and learning strategies linked to didactic methodologies that are scarcely sensitive to the learning needs of many students. Getting the attention of students is, in itself, a challenge and, much more, when there are learning difficulties that affect academic performance, such as those derived from attention deficit disorder with or without hyperactivity known by its acronym (ADHD) (López et al., 2015). According to the latter authors, this neurobiological disorder begins in childhood and is characterized by inattention and / or impulsive of hyperactivity. However, it also affects physical activity, diet, sleep, body image, and coordination. Currently, this disorder is very common in college students, but it is rarely diagnosed at that age (Danese et al., 2016). In most cases, those affected did not receive a timely diagnosis, they do not know the symptoms and simply do not know that they have this condition, as Rodillo (2015) points out: "it is considered the most frequent neurodevelopmental disorder" (p. 53). At the university level, the individual development of students must be a key element of training. In most cases, university students do not receive the necessary attention when they have a learning difficulty, since it is assumed that being adults, a large part of the responsibility for their learning falls on themselves. The problem presented by university students with ADHD is poor academic performance (Prevatt, et al. 2012), sometimes due to lack of concentration, lack of motivation on the part of the teaching staff, lack of effective teaching strategies that help to improve the level of attention. According to González (2018), teachers recognize that they require training in the subject to work properly and use educational strategies that help university students.

Hence, it is key to explore appropriate teaching strategies and methodologies. The innovative nature of the study lies in the experimentation with didactic methodologies that pay attention to the educational needs of each student in the university environment.

In the same way, they follow a teaching methodology that we understand to be effective for all types of learners; supported by two teaching strategies. The first consists of brain gymnastics and movement dynamics; and the second, consists of didactic practices based on principles of positive psychology. In this work, university students with ADHD and without ADHD participated in the same context, with the same teaching methodology taking into account the philosophy of inclusive education as a training strategy, also in university education (Moriña et al., 2015a). Thus, the general purpose of the study is to get closer to the experiences with respect to this novel methodology in a wide group of students with ADHD, but in an inclusive context of teaching for all (where other students without ADHD also participate, learn and learn). benefit from this type of methodologies). The study takes into account the criticisms and questions that other research maintains regarding these proposals (Dijk and Lane, 2020).

It is important to emphasize that in the practice of inclusive education, the teacher should consider designing her class based on the educational needs of their students and, thus, collaborate with the process of educational inclusion in the university environment. Therefore, in order to help them improve their attention in class, it is necessary to implement a comprehensive and inclusive didactic methodology, which, based on strategies with a neuroeducational approach and positive psychology practices, improves both their learning and their lifestyle. Recent studies such as the one by Tham et al. (2019) show that teachers show a growing interest in the applications of neuroscience research to pedagogy in the classroom.

Background and current status of the issue

Attention to educational needs in university education has been the object of recent study in comparison with the volume of scientific contributions at other educational levels (Gómez, et al. 2018). There are numerous investigations that deal with the experience of students with educational needs at the University (Mullins and Preyde, 2013; Redpath, et al., 2013). However, little research indicates effective teaching strategies at the college level for students with ADHD. That is why the development of new teaching strategies is important as they will help improve the attention and academic performance of students.

According to a study by Prevatt, et al. (2012) college students with ADHD tend to have a low grade point average, are more likely to be in an academic probation period, have more difficulty in reading and writing tests, and report more academic problems than those without ADHD, they also report scores lower in time management, concentration, motivation, anxiety, test-taking skills, and study strategies than those without ADHD.

Other studies conclude that there are factors, such as positive mental support from mentors and caregivers of college youth with ADHD, that protect them from negative outcomes (Wilmshurst, et al. 2011). In the same sense, a study carried out by Sánchez (2018) suggests that, in order to improve the learning process of students with ADHD, it is relevant that teachers make changes in the methodology and communication, as well as in the use of new resources and tools, as they are essential issues so that an effective teaching-learning process can be achieved in them.

Literature review

Two main approaches theoretically and empirically guide the research; on the one hand, the incipient contribution of studies and theorizing on neuroeducation and, on the

other, positive psychology. We address below some of the conceptual aspects that support the research. Thus, Gago and Elgier (2018) collect contributions such as Fonticiella (2007) that show that one of the main contributions of neuroscience to education is the educational and therapeutic strategies that are generated around learning and growth learning disorders. Thus, they indicate that specific intervention strategies have been carried out for each of them.

"Neuroeducation Studies" is defined as a growing interdisciplinary field based on the synergistic connection between neuroscience, cognitive science, psychology and education in an effort to improve our theory, understanding and practice of learning and education (Nouri, 2013). According to Nouri (2016) other terms have been used synonymously in neuroeducational studies, such as "Educational neuroscience" and "Mind, brain and education". Specifically, there are works that link the Brain Gym with neuroeducational proposals (Compagno and Pedone, 2016) others that position it as a myth in neuroscience without scientific evidence (Bruer, 1999).

The Brain Gym is a series of fast, fun and energetic activities. These activities are effective in preparing any student for specific coordination and thinking skills (Ruiz, 2016, p.18). According to Compagno and Pedone (2016), these activities are based on the idea that simple physical exercise helps blood flow to the brain and improves the learning process by ensuring that the brain remains alert. According to the authors, studies in Brain Gym attest that movement increases the electrical activity of the hippocampus and, consequently, improves learning and memory formation. By enhancing the activity of neurons, exercise increases the brain's ability to receive proprioceptive information. According to González (2008, p. 67) it is a "very simple system of mental and bodily exercises, whose primary objective is to improve the different thought processes". Gymnastics is based on the principle that affirms that there is no learning without movement, because this genre develops neural networks or connections. Brain gymnastics connects the two hemispheres of the brain so it helps to maintain the attention of the practitioner, it is appropriate for all types of learners, from a child, adolescent, adult and even an elderly person. According to Condor (2016), it is a technique that improves school performance, through the use of body exercises, the same ones that help to clear the mind, increase attention, reverse cases of hyperactivity, dyslexia and behavior disorders in children. In addition, the author considers it a technique and a practical tool for learning.

Brain gymnastics has multiple benefits, according to Jaya (2018, p. 9), among which are the following: 1) It helps to effectively and creatively solve learning problems, 2) It allows to perceive reality from different or alternative points of view, which streamlines thought processes and contributes to the development of intelligence, reflective and consequential thinking, 3) Promotes anticipation of the future, when understanding cause-effect relationships, 4) Contributes to planning and projection of actions with greater degree of organization, 5) It collaborates in the discernment of the primordial from the secondary and the discovery of relationships that previously remained hidden, 6) It favors the understanding of the functioning of the universe, in order to design effective strategies to face the changing circumstances of the life, 7) It facilitates making the right decisions with greater speed and certainty, 8) It provides an improvement of the skills of the p Basic friction: memory, reasoning, attention, perception, motivation and emotion, 9) It develops intrapersonal, interpersonal, linguistic, logical, spatial, mathematical intelligence, 10) It increases brain potential in students.

On the other hand, positive psychology is an indispensable complement for the personal development of the human being. Positive psychology is a branch of psychology that presents us with a different way of seeing life; a lifestyle in which we focus on the positive, while remaining objective, but using positive energy to our advantage, rather than wasting it on attitudes or behaviors that drain our energy and consume us. According to Tarragona (2013, p. 115), positive psychology aims to discover and promote the factors that allow individuals and communities to live fully and can be combined in a productive way with a group of therapies called "constructive therapies" that include narrative, collaborative and solution-focused therapy. This approach to positive thinking is the basis for the integral development of the human being since it promotes both physical and mental well-being and that is essential for anyone who wants to be successful in life, but it only works with the sincere and persevering will of the person who applies it and who really wants to help themselves improve.

According to Tarragona (2013, p.116) the factors that contribute to well-being are positivity, interpersonal relationships, involvement, sense of life and goals achieved. Positive psychology as part of the integral development of the human being is vital for the improvement of ADHD (Newark, et al., 2012). It is a proposal for a healthy lifestyle that ranges from eating healthy, taking care of your body and cultivating the spirit by developing universal values that help human beings improve their living conditions.

If we see each of the elements necessary to achieve human well-being that Seligman (2019) points out, they are included in the didactic methodology proposed in this study, such as: 1. Cooperative work, which contributes to generating better relationships between students; 2. Positive thinking through chat, which contributes to the formation of positive thinking; 3. Development of self-confidence that improves self-esteem; 4. Involvement, because it integrates students into experiments or activities that require concentrating on the moment; 5. Meaning, because they are taught through personal development training to discover their purpose in life; and finally, 6. Goals, because they are invited to participate in the challenge of putting into practice the methodology and the implementation of habits that will help them achieve their goals and have a balance in their life that allows them to achieve success.

In brain gymnastics and movement dynamics activities, students participate together as a single group or in pairs, which creates a pleasant and trusting environment, while strengthening relationships between them. Bisquerra and Hernández (2017) point out that

> group activities promote well-being and that research has shown that one of the main factors of well-being is social relationships. Therefore, performing group dynamics in class can promote learning and well-being (pp. 58-59).

Positive psychology can be applied in any class subject; We start from the general hypothesis that it generates a positive atmosphere in the classroom, improving the attention of the students, since it provides an atmosphere of peace, fellowship, joy; In addition, it generates that young people act as they are in front of the teacher within the limits of respect and cordiality. It is possible to improve the interest of students with ADHD in a certain subject, even if it is not pleasant for them and that, thus, is perceived and experienced by the main participants.

Method

Objectives

The purpose of the study is to deepen the experience of a group of university students in a university education based on neuroeducation and positive psychology. Part of these students have been diagnosed with ADHD (applying the Kooij and Francken test, 2010). We are especially interested in: a) knowing their perceptions regarding the impact of the use of Brain Gym strategies and movement dynamics and b) inquiring about their experiences and perceptions regarding positive psychology practices for personal development.

Phenomenological method

To cover these objectives, a qualitative methodology based on phenomenology is followed. The methodological approach emphasizes data analysis, which is characterized by focusing on describing the essences of everyday experiences. Concretely, a transcendental phenomenology is adopted. Phenomenology tries to give a direct description of our experience. According to Cresswell (2007), transcendental phenomenology is based on Duquesne's studies in phenomenological psychology. By opting for the phenomenological method following Husserl's postulates, we follow specific techniques to get to grasp the phenomenon as its meaning is through the beliefs and memories of the people who experience it. For this, as Jiménez-Cortés (2020) collects, a phenomenological reduction process is undertaken that allows us to delve deeply into the consciousness of the participating people and discover the underlying structures of a phenomenon. Thus, the key feature of phenomenological research is its rich and detailed description of the phenomenon. The analytical steps have therefore consisted of:

1. Reduction of information derived from interviews. Establishment of analysis units around the phenomenon.
2. Approach to the phenomenon from the individual perspectives of each student. To do this, a process of imaginative variation is followed, which requires seeing the phenomenon from a variety of points of view.
3. Interpretation of common patterns through a reconstruction of the phenomenon that reveals its structure and elements.

At all times, an attempt has been made to apply the bracketing or parenthesis process characteristic of phenomenology, which Husserl calls "epoche", that is, leaving one's own conceptions as investigators aside from the study of the phenomenon.

Participants

A total of 43 university students are taken into account for the research, of which 22 participants are diagnosed with ADHD (15 girls and 7 boys); and 21 participants do not have an ADHD diagnosis (15 girls and 6 boys). In our work, the didactic methodology under study is developed in the subjects of English and business legislation of a private university in Honduras.

Instruments and data collection procedure

The data collection is carried out from the transcendental phenomenological tradition and the information is collected through in-depth individual interviews. Each interview had an average duration of one hour per student. The interview consists of 27

questions elaborated "ad hoc" which are oriented to the object of study; that is, how do psychopedagogical principles and practices derived from neuroeducation and positive psychology work in the lives of each of the participants. Thus, university training incorporated activities such as: practice of values, reading positive thoughts daily and reflecting on these, listening to lectures by successful people and reflecting on positive thinking videos. The interview was carried out in a place where the students felt comfortable and did not have interruptions at the time of being carried out, with prior informed consent and approval of the ethics committee of the corresponding institution. Prior to the application of the interview, a content validation was carried out through experts from the areas of methodology and diagnosis in education and psychological intervention. The interviews were conducted in the month of July 2019 and it was decided to apply it to all students, with and without ADHD for a greater depth of research. These were transcribed and the information had a qualitative analytical treatment with the help of the specialized software Atlas ti v. 7.

Analysis procedures and techniques

For the coding of the information, a procedure of reading and delimitation of the units of analysis is followed. The categories arise from an inductive process and help to describe the experience of the participants. It was ensured that the categories were not of high inference, maintaining the coding "in vivo" for the genuine expression, that is, in the voices themselves, of the experiences. The category system derived from the inductive analysis process is shown below (see table 1).

Table 1
Category system

Categories	Modalities
Diagnosis in ADHD	Students diagnosed with ADHD
	Students without ADHD diagnosis
Sex	Girls
	Boys
Experiences around the dynamics of Brain Gym	Impact on relaxation
	Impact on the activation of senses
	Impact on attention and concentration
	Performance impact
Experiences around the dynamics of movement	Impact on relaxation and stress
	Impact on attention and concentration
	Impact on vital energy and mood
	Impact on fun and personal enjoyment
Experiences regarding positive psychology practices	Strengthening resilience
	Generation of motivation
	Generation of positive thinking (undertake, achieve dreams ...) and change in ways of thinking
	Strengthening values
	Strengthening of self-esteem
	Generation of a positive attitude

Once the initial category system was established, they were refined in a process of constant comparison and open coding. As analysis techniques, Atlas ti tools such as networks and the use of selective search tools by categories were used. In the first level coding, a content analysis was carried out where the pertinent codes and citations were

created. In second-level coding, the existing relationships between code and code were found and the respective networks were elaborated. Afterwards, individual textual descriptions, descriptions composed of themes and a global composite description of the phenomenon were carried out. This process helped to generate a composition of the essence and structure of the phenomenon under study: the impact of the formative experience based on neuroeducational learning strategies and based on principles of positive psychology.

A control of the data collected was carried out through a log in which the pertinent annotations were made and criteria and indicators for the application of the categories were established.

Next, we show the results obtained using a phenomenological analysis approach.

Results

In relation to the experience around how the dynamics of Brain Gym and movement help to improve the attention in class of university students, we briefly differentiate the perceptions of students with ADHD and without ADHD:

Regarding the experience around brain gymnastics, students diagnosed with ADHD expressed the following:

a) It helps to relax: “it has helped me to relax before the exams”.

b) It helps the brain to be more active and concentrate: "It helps to awaken our senses and be more active", "if it helps me because that puts the brain to work and practice it for any problem since these improve the performance of the brain", "It is a gymnastics that helps with stress and concentration, it helps me because I have checked it in class and before studying."

c) It helps to improve brain performance: "It is necessary and very good since it helps us to develop the brain and the skills we have, it helps to better develop our daily activities", "if it helps me because that puts the brain to work and practice it for any problem since these improve the performance of the brain ”.

Regarding the experience around brain gymnastics in students without a diagnosis of ADHD, they expressed the following:

a) It generates relaxation: "They are exercises that help you relax and be more attentive to class because they relax your eyes, mind and body", "Brain gymnastics, even if we look half crazy I like it, because they calm me down and relax", " It is when we stimulate both sides of our brain, if I feel that it helps me and relaxes me because it relaxes my body”,“activation of our brain and body; it helps us relax and pay more attention in class”.

a) It improves attention: “it is an activation of our body by being able to better understand something and that we better retain the information that we study or that we are doing”, “it is an exercise to activate the neurons of the brain and it works, it helps me to put attention in class”,“ brain gymnastics and cross walking are very effective when you have to control yourself and keep one thing in mind”,“do exercises to oxygenate the brain, in a certain way, do a little exercising before class wakes me up if I am in a low

mood”,“ it is raising our knees or dancing, because it lifts my spirits and interest, it makes me feel more enthusiastic.”

b) It improves performance: "Exercising the brain every day in order to activate neurons and perform better, if it helps me because things are done calmly and better", "they are exercises that oxygenate the brain and help concentration, if it helps me a lot in the exams and when it comes to remembering important data on the subject ”.

Comparing the results between both groups of students; With and without ADHD, it can be observed that the practice of brain gymnastics in the university classroom is useful for both groups, in the sense that it has a positive impact according to their perceptions. They appreciate an improvement in attention and mood improvement as well as perceive effects on the nervous system reflecting on the body, since it makes them feel relaxed. From their perception, this methodology makes it easier for them to remember and it "helps them to study."

Regarding the dynamics of movement (dances, breathing strategies ...) the students with a diagnosis of ADHD expressed:

a) They generate relaxation: "The breathing ones because they help me to oxygenate the brain and I feel more relaxed than I normally feel", "they are good and fun, they create relaxation and interests of us towards them", "the dances because I love dancing, and the brain gym since I feel that the moment we close our eyes and breathe, I feel that it relaxes me a little ”.

a) They improve attention: "They are very feasible since, if they help to improve attention and relax and spend a good time with our classmates more when we did the dynamics of the dance", "it is proven that it makes us pay attention and awaken our minds”,“ They are good because they activate us to pay attention in class”,“dance, since it puts my concentration on my motor functions and activates my concentration”.

b) They generate energy: "They are effective, the body receives positive vibes and that gives us energy, so we can pay more attention because it does not remove laziness."

d) They generate fun and personal enjoyment: "Dances seem fun to me and allow my brain to be a little more alert", "they are important because there are days when we feel overwhelmed and when we do this type of dynamics we have a lot of fun".

For their part, the students without a diagnosis of ADHD expressed

a) It improves concentration: "Although it seems simple, dancing helps us, since we have to concentrate on the movements and steps that follow the rhythm, our brain needs to concentrate to carry out the activity", "I like them because they make it pay attention because apart from doing basic exercises, it manages to create a dynamic and happy environment”,“ they are very good, they help to have people's attention and make people stay awake and not get bored”,“I think it is relaxing and at the same time it locates us and we focus on what we are doing. "

b) It increases spirits: "Dance dynamics raise good spirits a lot, I like them a lot because it helps to release stress", "I think it is a very good tool, keeping the body active awakens interest and the person feels more energy ”,“ they are fun, in a way it makes us laugh and our brains wake up, it makes us have more spirits.”

c) It reduces stress: “They are good, it helps to relax and be well with oneself”, “the moments when we do an activity that relaxes us”, “that if they work since they relax us and without stress it is easier to concentrate”.

d) It generates fun: “They are fun, in a certain way it makes us laugh and that our brain wakes up makes us have more spirits”, “I think that the breathing with the feet and the crossed walking makes me pay attention, because apart from enjoying it makes that I have to coordinate between my body and brain”.

In both groups similarity is also observed in the results, the mind-body connection is harmonized, generating positive results such as improved attention, mood (energy) and stress reduction.

The experiences of university students diagnosed with ADHD in terms of positive psychology practices and personal development focused on a series of perceived impacts:

a) It strengthens resilience: “It helped me because it allowed me to learn not to give up”, “it has helped me to realize that I can overcome any adversity and that I have to improve in listening to others”.

b) It generates motivation: "Receiving positive messages and keeping them in mind helps to lift our spirits", "as the motivational videos make me think about my future and achieve my proposed goals", "all the conferences we have had helped me to motivate myself and to think in a positive way ”,“ motivation to be able to move on and be able to pay attention”.

c) It generates positive thinking: "It has helped me to be positive, a dreamer and to want to know more", "It has generated the desire to study, to think positively, to fight for my dreams and to love and take advantage of every minute of my time", " It has helped me to be more positive and put the values into practice ”,“ when I read positive messages it changes my way of thinking about the day and they also make me happy ”,“ they change our negative thoughts and help us feel better ”,“ It has helped me with my thinking as a leader and entrepreneurship”,“ yes, when I get up and look at the messages it motivates me to get up and face the situations that arise ”.

d) It strengthens values: "improve my values and put them into practice, also fighting for my dreams, to be more responsible", "I exercise more, I can better manage my daily routine", "see the importance of values in my life, responsibility and other things that are or have great relevance in life”.

e) It strengthens self-esteem: “You have to have confidence in yourself; We must not give up. We are capable of achieving what we set out to do”,“ yes, I must understand that I should not feel like the victim but rather victorious every time I feel overwhelmed and stressed, this has taught me to be more committed to my career ”,“ how to be a better person as it has taught me to be a more independent woman than believing in me."

Regarding the results of the experiences of university students without a diagnosis of ADHD in relation to positive psychology practices applied in the classroom, the following aspects are extracted:

a) It helps with motivation: “Honestly, they do help because that way I feel motivated to continue growing every day”, “they help me to motivate myself and expel bad thoughts and change them into happy thoughts”, “because at some point in life, I have difficulties, so with motivational lectures they encourage me to be motivated, so that I

can overcome those difficulties ",“ it is a very beautiful and positive class where I have learned a lot from class and from life ".

a) It generates a positive attitude: "Perseverance and always a positive attitude no matter how difficult and expensive it is, I know that if I set my mind to something I will achieve it", "to smile regardless of all the difficulties that happen in my life", "to see the positive side of problems, always be positive"," in this class I learned how to study and that has helped me in the rest of the classes"," when I am stressed in other classes I repeat the positive phrases of the English class" , "I use the positive thing we do in class to improve every day as a person."

c) It generates a change of thought: "It has generated positive thoughts about how to move forward, about all the good things that await me on the road if I do things well every day", "I had not done anything productive, I only thought negative things, then over time that was changing, "I have learned to be more positive and to be able to organize everything at the time of doing work", "being positive has always helped me because it is motivating and clears bad thoughts", "listening to staff who have I really liked being successful, it is a clear example of perseverance ".

e) It improves self-esteem: "Make it more reliable to believe in myself and that I am capable of achieving everything that I propose", "It has helped me a lot, when I feel that I can not I remember the positive affirmations and also in the way of how to organize each content of my classes ".

Comparing both groups, similarity is observed in terms of generating change for improvement in thinking, attitude, mood and self-esteem, it can be observed the strengthening of values such as responsibility, self-esteem, motivation and positive attitude, which helps to improve comprehensive of the human being.

Discussion and Conclusions

The phenomenological perspective allows to deepen the experiences lived in university education from an inclusive perspective, that is, from the point of view of the contribution for all. According to the phenomenology, the analysis undertaken allows us to register the imaginative variations in a double sense, on the one hand, the individual intragroup experiences (students with ADHD diagnosis) and on the other, the intergroup experiences (students with and without ADHD diagnosis. Without these perspectives, the essence of the phenomenon we are considering cannot be understood. By focusing on the lived meanings of the didactic experience, the results show that both students with ADHD and students without ADHD perceive themselves as benefiting from the teaching-learning strategies that were put into practice as the basis of this research and that use an alternative university training from a neuroeducational approach.

The results of this work highlight the value that university students give to the employment by teachers of other alternative methodologies, as Moriña, et al. (2015b) in their work, who show that the students recommend that the teaching staff be updated and use methodologies other than the lecture. However, there are studies such as that by Van Dijk and Lane (2020) that are very critical of the approaches to a university education based on this type of neuroeducational strategies. Especially because teachers are often infused with a series of neuromyths that can be a problem not only at the classroom teacher level but also at a structural level (educational system, leaders, curriculum ...) as

a widespread problem that justifies a more in-depth examination of this topic from neurology in education.

As contributions such as that of Carriedo (2014) have shown, the point of interest for neuroeducation is physical activity, which according to the researchers can bring about a general improvement of cognitive functions, greater self-esteem, and benefit people diagnosed with ADHD, anxiety, or depression. In our study, the experiences of students with both ADHD and without ADHD converge to mean that the didactic experience as relaxing also helps them remember information, improve attitude, concentration, helps the brain to be more active, as they recognize with their own words. However, the perception of the experience in these terms does not guarantee that they are actually taking place, and it is that, as De Vos (2016) considers, the behavioral study is key to continue advancing in the educational area and in the understanding of the processes of teaching and learning so that neurosciences contribute practical knowledge to the educational area. Regarding the dynamics of movement, it is concluded that students with ADHD consider that they improve attention, generate energy and encouragement, relaxation and fun compared to the opinions of students without ADHD. There are those who consider that it improves concentration, increases spirits and reduces stress. It can be concluded that both groups consider that it helps them improve attention or concentration, increases their spirits and reduces stress. Regarding positive psychology practices around personal development experiences, students with ADHD experienced the following; generates positive attitude, helps resilience, generates motivation, change of thought and greater self-confidence compared to the opinions of students without ADHD; generates a positive attitude, helps motivation and generates a change of thought. It is observed that both groups consider that it generates a positive attitude, motivation and generates a change of thought. These themes constitute the essence of the phenomenon.

With the results presented, we can affirm that the strategies used in this research are perceived as viable, both for students with ADHD and for students without ADHD, but they require training and strategic planning to carry it out in university education. The results are positive, for a university education related to the educational inclusion sensitive to students who have ADHD. The results are also positive due to its impact on personal growth, ultimately affecting their lifestyles.

The limitations of the study mainly point to the consideration of research methodologies that incorporate interdisciplinarity in their neuroscientific dimension. Also the incorporation in the study of the teachers' beliefs about the potentialities of neuroeducation, making a holistic analysis of the confluence between the design of the didactic intervention, the beliefs and expectations of the teachers around these practices and the experiences of the students, and the incorporation of the gender perspective in the analysis and interpretation of results that have not been contemplated in this contribution. So far, neuroeducational approaches are subject to the need for greater experimentation and a combination of research methodologies that allow deepening from different disciplines and provide validated knowledge in a mixed way. As future lines, we also point to the consideration of other key factors to assess the effectiveness of the didactic methodological proposal, such as academic performance in the subjects in which it is used.

References

Bisquerra, R., & Hernandez, S. (2017). Psicología positiva, educación emocional y el programa aulas felices. *Papeles del Psicólogo, 38*, 58-65. http://www.10.23923/pap.psicol2017.2822

Bruer, J.T. (1999). In search of... brain-based education. *Phi Delta Kappan, 80*(9), 648-657.

Carriedo, A. (2014). Beneficios de la Educación Física en alumnos diagnosticados con Trastorno por Déficit de atención con Hiperactividad (TDAH). *Journal of Sport and Health Research, 6*(1), 47-60.

Compagno, F. & Pedone, G. (2016). Teacher training paths between neuroeducation and professional learning community. In *Proceedings of INTED2016 Conference,* 7th-9th March 2016, Valencia, Spain.

Condor, A. G. (2016). *La gimnasia cerebral como estrategia de apoyo para estimular la concentración en niños y niñas de 4 a 5 años en la Escuela Leopoldo N. Sanchez.* (Trabajo fin de grado no publicado). Universidad Técnica del Norte

Creswell, J. W. (2007). *Qualitative inquiry y research design. Choosing among five approaches*. Sage

Danese, A., Agnew-Blais, J.C., Polanczyk, H.V., Wertz, J., Moffit, T., & Arseneault, L. (2016). Evaluation of persistense, remission and emergence of attention-deficit/hyperactivity disorder in young adulthood. *Jamapsychiatry*, *73*(7), 713-720. https://doi.org/10.10017jamapsychiatry.2016.0465

De Vos, J. (2016). The Educated Brain: A Critique of Neuroeducation. De J. Vos (Eds.)*, The Metamorphoses of the Brain-Neurologisation and its Discontents.* Palgrave MacMillan.

Gago, L.G. & Elgier, A.M. (2018). Trazando puentes entre las neurociencias y la educación. Aportes, límites y caminos futuros en el campo educativo. *Psicogente 21*(40), 476-494. https://doi.org/10.17081/psico.21.40.3087

Gómez, C., Fernández, E., Cerezo, R., y Núñez, J.C. (2018). Dificultades de aprendizaje en educación superior: un reto para la comunidad universitaria. *Publicaciones, 48*(1), 63-75. https://doi.org/10.30827/publicaciones.v48i1.7328

González, J. (2018). Encuesta a profesorado universitario sobre el déficit de atención e hiperactividad en personas jóvenes adultas. *Revista educación, 42*(1), 1-18. https://doi.org/10.15517/revedu.v42i1.22714

Fonticiella, S. (2007). Trastornos del aprendizaje: Enfoque desde las Neurociencias. *Educación inclusiva, 4*(2), 13-30.

Jaya, S.R. (2018). *Guía de movimientos corporales de gimnasia cerebral para facilitar el aprendizaje en el nivel de básica elemental de la unidad educativa "Juan Beningno Vela".* Pontificia Universidad Católica de Ecuador. http://www.123456789/2243/1/76615

Jiménez-Cortés, R. (2020). *Investigación educativa. Introducción a las metodologías clásicas y emergentes.* Granada: Comares.

Kooij, S., & Francken, M. H. (2010). Entrevista Diagnóstica para el TDAH en adultos 2.0 (DIVA 2.0), en J.J.S. (Ed.). *TDAH en adultos. Diagnóstico y tratamiento*. Pearson Evaluación y BV de la Información.

López, G.F., López, L., & Díaz, S. (2015). Trastorno por deficit de atencion con hiperactividad (TDAH) y actividad física. *Revista digital de educación fisica, 6*(32), 53-65.

Moriña, A., Cortés-Vega, M.D., & Molina, V.M. (2015a). Faculty training: an unavoidable requirement for approaching more inclusive university classrooms. *Teaching in Higher Education, 20*(8), 795-806. https://doi.org/10.1080/13562517.2015.1085855

Moriña, A., Cortés-Vega, M. D. & Molina, V. M. (2015b). Educación inclusiva en la enseñanza superior: soñando al profesorado ideal. *Revista latinoamericana de Educación Inclusiva, 9*(2), 161-175.

Mullins, L., & Preyde, M. (2013). The lived experience of students with an invisible disability at a Canadian university. *Disability & Society, 28*(2), 147-160.

Newark, P.E., Elsässer, M., & Stieglitz, R.D. (2012). Self-esteem, self-efficacy, and resources in adults with ADHD, *Journal of Attention Disorders XX*(X),1-12. https://doi.org/10.1177/1087054712459561

Nouri, A. (2013). Practical Strategies for Enhancing Interdisciplinary Collaboration in Neuroeducational Studies. International J*ournal of Cognitive Research in science, engineering and education (IJCRSEE), 1*(2), 94-100.

Noiri, A. (2016). The basic principles of research in neuroeducation studies. *International Journal of Cognitive Research in Science, Engineering and Education 4*(1), 59-66.

Prevatt, F., Proctor, B., Best, L., Baker, L., Walker, J., & Taylor, N. (2012). The positive illusory bias: does it explains self evaluations in college students with ADHD? *Journal of Attention Disorders*, *16*(3), 235-243. https://doi.org/10.1177/1087054710392538

Redpath, J., Kearney, P., Nicholl, P., Mulvenna, M., Wallace, J., & Martin, S. (2013). A qualitative study of the lived experiences of disabled post-transition students in higher education institutions in Northern Ireland. *Studies in Higher Education, 38*(9), 1334-1350.

Rodillo, E. (2015). Trastorno por Deficit de Atención e Hiperactividad (TDAH). *Revista médica clínica Las Condes*, *26*(1), 52-59. https://doi.org/10.1016/j.rmclc.2015.02.005

Ruiz, L.V. (2016). *Técnica del Brain Gym para la motricidad fina y gruesa y su incidencia en el aprendizaje significativo en los y las estudiantes del inicial de la unidad educativa.* Universidad Técnica Estatal de Quevedo. http://repositorio.uteq.edu.ec/handle/43000/1806

Sánchez, L. (2018). Diseño de una propuesta de intervención para mejorar las habilidades sociales en alumnos con TDAH. *Revista Reflexión e Investigación Educacional, 1*(1), 83-91. http://new.fundacioncadah.org/j289eghfd7511986_uploads/20130911_hfh4VpcqhX7EVSqWNvS3_0.pdf

Seligman, M.E. (2019). Positive psychology: A personal history. *Annual review of clinical psychology, 15*, 1-23.

Tarragona, M. (2013). Psicología Positiva y Terapias Constructivas: Una Propuesta Integradora. *Terapia Psicológica, 31*(1), 115-125. https://doi.org/10.4067/S0718-48082013000100011

Tham, R., Walker, Z., Tan, S. H., Low, L.T., & Chen, S.H. (2019). Translating education neuroscience for teachers. *Learning: Research and Practice, 5*(2), 149-173. https://doi.org/10.1080/23735082.2019.1674909

Van Dijk, W., & Lane, H. B. (2020). The brain and the US education system: Perpetuation of neuromyths. *Exceptionality, 28*(1), 16-29.

Wilmshurst, L., Peele, M., & Wilmshurst, L. (2011). Resilience and well-being in college students with and without a diagnosis of ADHD. *Journal of Attention Disorders, 15*(1), 11-17. http://www.10.1177/1087054709347261

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