Design and Implementation of an Educational Intervention to Raise Teachers' Well-Being, Based on the Evidence of Positive Psychology and Neuroscience

Diseño e implementación de una intervención educativa para elevar el bienestar docente basado en las evidencias de la psicología positiva y las neurociencias

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Abstract

Most Chilean teachers are subject to high demands and deficient working conditions that affect their well-being. The aim of this study is to evaluate the feasibility of promoting teachers' well-being through a cognitive experiential intervention, based on evidence from Positive Psychology studies and Neuroscience. An intervention consisting of seven sessions (19 hours) was designed and implemented. It was attended by 31 teachers from a primary school in a highly vulnerable neighborhood of Santiago, Chile. Their well-being was evaluated using a battery of seven validated self-report tests at the beginning, the end, and two months after the intervention. A quantitative non-probabilistic analysis of the variables was conducted and compared with a qualitative analysis of the participants' testimonies. The results indicated significant improvements in five of the seven tests: Ryff's Psychological Well-Being, Happiness (PEM), Positive and Negative Affect Schedule (PANAS), Hope, and Burnout (Maslach). Two months after the workshop most changes returned to baseline levels, but the variables «Self-acceptance» (Ryff) and «Pleasant Life» (Happiness) remained high. In conclusion, this cognitive-experiential intervention is associated with a positive impact on teachers' well-being. Periodic follow-up activities seem necessary to maintain these positive effects and constitute a topic for a new study.

Keywords: teachers' well-being, positive psychology, neuroscience, cognitive experiential intervention

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Resumen

La mayoría de los profesores chilenos están sometidos a altas demandas y condiciones laborales deficientes que afectan su bienestar. El objetivo de este estudio es evaluar la factibilidad de elevar el bienestar docente a través de una intervención cognitivo-experiencial basada en evidencias de la Psicología Positiva y las Neurociencias. Se diseñó e implementó un taller con 7 sesiones (19 horas). Participaron 31 educadores de un colegio de alta vulnerabilidad de Santiago de Chile. Se evaluó su bienestar utilizando una batería de 7 test de autorreporte validados al inicio, al finalizar y a los dos meses de la intervención. Se llevó a cabo un análisis cuantitativo no probabilístico de las variables y se comparó con el análisis cualitativo de testimonios de los participantes. Los resultados indicaron avances significativos en cinco de los siete test: Bienestar Psicológico (Ryff), Felicidad (PEM), Afectividad Positiva y Negativa (PANAS), Esperanza y *Burnout* (Maslach). A los dos meses la mayoría de los cambios retornaron a niveles basales, pero las variables Autoaceptación (Ryff) y Vida Placentera (Felicidad) se mantuvieron elevadas. En conclusión, la intervención se asocia con un impacto positivo sobre el bienestar docente. Se estima que con reforzamiento periódico estos cambios podrían mantenerse, constituyendo tema para una nueva investigación.

Palabras clave: bienestar docente, psicología positiva, neurociencia, intervención cognitivo-experiencial

The well-being of teachers is affected by chronic tensions, in terms of both working conditions and the nature of the activity. Hence the relevance of this study, which is aimed at designing an educational intervention to prevent disorders and strengthen teachers.

In Chile, more than three and a half million students, spread between more than 12,000 educational institutions (Mineduc, 2011), are under the influence of their teachers for approximately 6 to 8 hours per day for 12 years of their lives (Arón & Milicic, 1999). According to the *Estudio de la salud laboral de los profesores en Chile* [Study of the occupational health of teachers in Chile] (Valdivia et al., 2003), a large percentage of teachers make their work in poor physical and mental health.

Public educational policies in Chile have focused on developing training, ergonomic, and economic aspects at the expense of strengthening the emotional aspects of teaching (Unesco, 2006).

It is appropriate to implement specific actions to strengthen the mental health of teachers, especially in sectors where they are more exposed to unfavorable working conditions and psychosocial problems that affect emotional balance (Vidal, 2011).

According to the First Regional Comparative and Explanatory Study (PERCE) for 1997 conducted across Latin America and ratified by the Second Study (SERCE) of 2006, classroom climate is the variable that exerts the greatest influence on school performance (Unesco, 2008). It has been found that learning becomes difficult when there is an atmosphere of tension and stress (Jensen, 2005). An emotionally healthy and positive teacher will create a good climate in the classroom and foster their students' learning.

The aim of this study was to evaluate the feasibility of raising the well-being of practicing pre-school and elementary school teachers through an intervention designed and supported by the evidence of Positive Psychology and Neuroscience.

In order to do this, the initial well-being of the head teachers was measured at a highly vulnerable school in Santiago. A cognitive-experiential module, adapted to the well-being needs of the teachers, was then implemented. The significant differences between the initial and final state were determined by observing the changes sustainability two months after the intervention ended. At the same time, reflective testimonies generated by the participants in relation to their experience were also analyzed.

Theoretical Framework

Positive psychology

Positive Psychology is the scientific study of optimal human functioning (Seligman, 2002). Its purpose is to generate a change in focus from traditional psychology, whose concern is focused on disorders and malfunctioning, to building qualities that allow subjects to flourish. According to Salanova, Martínez, and Llorens (2005), people can learn to manage their positive emotions (happiness, intrinsic enjoyment, pleasure), effective methods of coping, resilience, authenticity in social relationships, the flow (highly enjoyed experiences), hope, self-efficacy and self-determination, and engagement. By having a positive predisposition, changes occur in the brain that release hormones responsible for mood, pleasure, motivation, and the way in which we interact with the world. Positive emotions help build personal resources that carry greater satisfaction and well-being (Fredrickson, 2000).

Neuroplasticity and learning

In a purely neurophysiological sense, learning is the process by which organisms modify their behavior to adapt to changing environmental conditions. It is the main method of adaptation of living beings and can be considered as a nervous system modification that results from experience (Fasce, 2008).

The nervous system has the ability to change; even in the adult, neuroplasticity has an important role in learning new skills, establishing new memories, and responding to environmental adversity. Our own thoughts are able to cause neuroplasticity and condition our behavior and learning (Davidson & Begley, 2012). This knowledge underpins the intervention, based on the premise that, with willpower, exercise, and perseverance, it is possible to change unhealthy behaviors and incorporate strategies of well-being into our daily lives. The habits of a good life can be taught.

What is well-being?

There is currently much scientific interest in issues related to well-being, which is measured with various instruments and analyzed according to diverse models. However, no univocal definition of the construct has been reached, mainly due to its subjective nature. Ryan and Deci (2001) refer to two perspectives, one called *hedonic*, which suggests that welfare consists of pleasure or happiness; and the other *eudaimonic*, which states that welfare is obtained with the development of human potential.

Subjective well-being (hedonic)

Current hedonic psychology is based mainly on the research of subjective well-being *(SWB)*. Diener (2000) states that subjective well-being is the valuation that a person makes of their life. There are two key areas: one related to affective-emotional aspects (mood) and another centered on cognitive-appraising aspects, that is, the evaluation of one's own life (Cuadra & Florenzano, 2003). Subjective well-being is commonly called *happiness* when people experience abundant positive emotions and few disagreeable emotions, they are involved in interesting activities, experience many pleasures and little suffering, and are satisfied with their lives (Diener, 2000).

Psychological well-being (eudaimonic)

Unlike subjective well-being, psychological well-being focuses on the development of skills and personal growth from an eudaimonic viewpoint (from the Greek *eu*: 'good', and *demon*: 'spirit'). Ryff decided to find the fundamental domains of optimal human functioning with a view to defining *positive mental health* (Ryff, 1989; Ryff & Keyes, 1995). She suggested a multidimensional psychological well-

being model composed by six dimensions of a good life: self-acceptance, positive relationships with other people, autonomy, environmental mastery, purpose in life, and personal growth. The Ryff model is highly valued, as it simultaneously develops scales that allow the six dimensions to be measured.

The two views are not entirely opposed and, in some sense, complement each other. Both aspects were relevant in the intervention, including activities, exercises, and topics that address both the valuation of a pleasant life, as well as more profound aspects that give meaning to our existence. Tests were applied to measure hedonic and eudaimonic variables.

Teaching, one of the most stressful professions

Teaching is one of the 10 most stressful professions, as confirmed by studies conducted in various countries (Esteve, Franco, & Vera, 1995; Travers & Cooper, 1996).

The European study on work absenteeism *Stress Impact* (2003-2005) concluded that professions related to education, health, and public administration have a *high risk* of stress. The reason is that these jobs involve contact with people who demand attention to meet their needs, without having adequate resources. There is a mismatch between expectations and realities that may cause frustration and subsequent pathological reactions (Zijlstra, D' Amato, & Pierce, 2006).

The mental and physical health of teachers in Chile

In our country, the number of teachers who have suffered episodes of major depression is three times the average for the Chilean population, and rates of anxiety disorders are double the average. Teachers also have high rates of dysphonia, cardiovascular diseases, and musculoskeletal disorders (Cornejo & Quiñonez, 2007).

Ávalos, the 2013 national Education Science award-winner, interviewed by Muñoz (2013), states that overload of activities provokes a growing sense of losing control over their time among teachers. The constant tension exhaust them and certain stress-related symptoms appear, such as irritability, damage to their mental health, poor sleep, and progressive fatigue. The researcher mentions that «the objective workload they have in Chile is the highest compared with other OECD countries. Moreover, 35% of survey respondents say they spend only from one to two hours a day with their family», this being a highly determinant factor in people's well-being/malaise.

Unesco (2006) states that the working conditions for teachers in Chile are characterized by the lack of time for rest, inadequate infrastructure, the lack of safety measures, and a dangerous and violent social environment. If we add problems of school convivence identified by institutions such as the Pontificia Universidad Católica de Chile, UNESCO, and the Ministry of Education itself, we have a series of factors that clearly influence the capacities of teachers themselves and the process of teaching-learning (Alvarado, Valdivia, & Piñol, 2010).

Emotional climate in the classroom

The school climate is provided by the perceptions of those working in the school and the context in which they do so, but also by the dynamics generated with the students, their families and the environment. These are damaged by the teacher's fatigue and absenteeism caused by physical and mental illnesses resulting from stress.

The First Regional Comparative and Explanatory Study (PERCE) of 1997 makes reference to the school climate as the variable that most influences the performance of students. Emphasizing this, the second Regional Comparative and Explanatory Study (SERCE) concludes that the creation of a respectful atmosphere, that is welcoming and positive, is essential to promote learning among students (Unesco, 2008).

Methodological framework

Type of research and design

An exploratory study was carried out, since this is an innovative intervention in Chile that addresses the problems of teachers with an unprecedented view, focused on emotional reinforcement. It is descriptive because it measures 19 dimensions of the teacher emotional well-being before and after an intervention, through a battery of valid and reliable tests, their results were subjected to statistical processing.

The research design is pre-experimental, pretest and post-test. There is a baseline pre-test situation that is compared with a post-test after an intervention. It is an intentionally selected group constituting a nonparametric controlled sample.

This design considers a mixed paradigm (quali-quantitative) that is predominantly quantitative.

The qualitative analysis is comprehensive-interpretative. Data collection was conducted based on reflective testimonies, processed with the content analysis technique, focusing on the grammatical level of Mayring (as cited in Cáceres, 2003).

The selection of the sample was based on the following criteria: dependence of the establishment (private subsidized), vulnerable neighborhood, adequate accessibility, teaching staff and management disposition, and the academic time available. Some 31 heads of course teachers were chosen, from pre-school to 8th grade, from a private subsidized school with a high index of vulnerability (75.7%) that belongs to the district of La Pintana, in Santiago.

The average age of the teachers was 33 (24 to 65 years of age).

Of the 31 participants, 27 fulfilled the required attendance level and completed the battery of pre- and post-tests, of whom 5 were male and 22 were female. Twenty-three participants completed the third application.

Variables

After the application of the cognitive-experiential module, variations in the teacher well-being were studied through quantitative analysis of 19 eudaimonic and hedonic dimensions, and qualitative analysis of reflective testimonies.

Description of the intervention module

The module, called *Construyendo Nuestro Bienestar* [Building Our Well-being], was structured based on the model of participatory adult education outlined by Vella (2000). A pilot intervention was conducted in a school with similar characteristics to the school studied. After that, modifications were made to the implementation period and the duration of the sessions, and the objectives and content were readjusted.

It was structured in seven experiential sessions of 2.5 to 3 hours, with a similar scheme to Vella's Four I's model (2000).

Inductive work

At the start of each session, the participants shared their personal experiences and the results of the tasks. A positive emotional climate necessary for learning was created in this space, a fundamental principle of education based on neuroscience.

Input

Relevant content on Positive Psychology and Neuroscience was provided. Based on this content, group dynamics and activities that facilitated the understanding and application of well-being strategies were created.

Implementation

It was the personal responsibility of the participants to do tasks and exercises with the new knowledge. Experiencing positive emotions and being able to self-manage the tasks consciously allows changes to take place in neural circuits (neuroplasticity) and this conditions behavior and learning. The participants performed a metacognitive task, observing their thoughts and attitudes, recognizing their explanatory style (optimistic/pessimistic) and their cognitive distortions as significant areas of Positive Psychology.

Incorporating what was learned into life

It is the internalization of the content covered, the incorporation of new habits that generate well-being and the spontaneous use of strategies, or the active search for experiences that create happiness.

The module´s general objective was to increase teacher well-being through the achievement of the following specific objectives:

- To prove it is possible to increase well-being by using simple strategies on a daily basis.
- To understand the neuroscientific bases that allow habits to be changed.
- To develop skills to increase one's own well-being in a long-lasting way.
- To learn about and apply strategies to increase optimism in themselves and those around them.
- To value the importance of having healthy personal relationships, making the proportion of positive interactions greater than the proportion of negative ones in all relationship areas.
- To manage personal energy in the most effective way, using rituals and other strategies to recover from fatigue.

The contents are attached in Appendix A.

Application tools and techniques

Tools to collect quantitative data

The sample was evaluated by applying a battery of seven validated and reliable self-report tests in three stages: at the beginning (T1), at the end (T2) and two months after the end of the intervention (T3).

Two tests were chosen to assess general well-being, three tests to assess specific aspects of well-being, and two tests to evaluate work-related variables.

The participants gave their informed consent to use the data obtained anonymously in this research.

General dimensions of well-being.

The Ryff Scales of Psychological Well-Being (1989). Spanish adaptation (Díaz et al., 2006). The Ryff model of psychological well-being (1989) has six dimensions: *self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth.*

- Self-acceptance: Having a positive attitude toward oneself is a fundamental characteristic of positive psychological functioning. It involves feeling at ease with oneself, being conscious of one's limitations.
- Positive relations with others: The capacity to love and have mature affection are fundamental components of well-being and health. It is essential to maintain stable social relationships and friends in whom one can trust.
- Environmental mastery: The personal skill to choose or create favorable environments for oneself. High mastery of the environmental creates a feeling of control over the world and influence over the surrounding context.
- Autonomy: Ability to sustain one's individuality in different social contexts. High levels of autonomy allow one to resist social pressure and self-regulate behavior.
- Purpose in life: Having clear goals and being capable of defining critical objectives.
- Personal growth: Capacity to create the conditions to develop potential and continue growing as a person.

Peterson, Park, and Seligman's (2005) PEM orientation to happiness, adapted by Penn University. People are constantly seeking happiness and choose for different routes. Peterson, Park, and Seligman developed the *orientations to happiness questionnaire*, proposing three subscales:

1. Pleasure: hedonic orientation, is part of the pursuit of pleasure and avoidance of pain.
2. Engagement: eudaimonic orientation, focuses on the search for engagement and enjoyment, putting our talents into practice. In Positive Psychology this is called *flow*.
3. Meaning: eudaimonic orientation which consists in using one's strengths and talents for a greater good.

Well-being Specific dimensions.

Positive and Negative Affect Schedule (PANAS) Watson, Clark, and Tellegen (as cited in Robles & Páez, 2003). This consists of two scales: Positive Affect (PA) and Negative Affect (NA), which allow positive and negative experiences in different timeframes to be measured separately. The PANAS was used for the *general* period of time.

Negative affect includes emotions and moods with unpleasant subjective content (anger, sadness, anxiety, worry, jealousy). People with high negative affect experience disinterest, boredom, grief, guilt, nervousness, anxiety, fear, shame, and envy. It is a risk factor for diseases.

Positive affect includes moods and emotions with pleasant subjective content (joy, affection, enjoyment, interest in things). People with high positive affect experience feelings of satisfaction, enthusiasm, energy, and confidence. It is related to extroversion, optimism, and resilience.

Life Orientation Test-Revised (LOT-R) Scheier, Carver, and Bridges (as cited in Ferrando, Chico, & Tous, 2002). This Spanish version, translated by Otero, Luengo, Romero, Gómez, and Castro (1998), aim to identify positive and negative expectations based on the degree of agreement or disagreement with 10 statements.

Adult Hope Scale (Snyder et al., 1991). Measures the cognitive construct of hope, a set of beliefs that personal goals can be achieved in the future and that everyone has the necessary power to make that happen.

It is divided into two subscales:

- Active planning towards achievement (ways): perception of having the capacity to find one or more ways to reach a goal.
- Positive energy towards achievement (agency): perceived ability to motivate oneself and achieve goals.

Dimensions related to work.

Q12 employee engagement scale (The Gallup Organization, 1992-1999). This organization developed this scale based on over 30 years of research with studies of reliability, validity, and applied use in the workplace (Harter, Schmidt, Killham, & Asplund, 2006).

Employee actively engaged/involved: works with passion and feels a profound connection to their company. This kind of employee drives the organization innovation and progress.

Neutral or non-engaged/involved employee: does not feel committed to the company and behaves like a «sleepwalking» during the work day. They dedicate time to their job, but do not show sufficient energy or passion for their working life.

Actively disengaged employee: is unhappy at work and actively demonstrates their discomfort. These employees undermine the achievements of their engaged workmates on a daily basis.

Maslach Burnout Inventory (MBI) Maslach and Jackson, (as cited in Ferrando & Pérez, 1996). This tool, adapted for teachers, was developed to detect burnout syndrome: a common response to chronic job stress in professionals who perform service jobs in direct contact with clients or patients.

It consists of three subscales:

1. Emotional exhaustion: items related to the reduction of emotional resources or feelings of being emotionally exhausted by working conditions.
2. Depersonalization: items that describe a cold and insensitive response to the subjects that are the focus of attention.
3. Personal fulfillment: items describing feelings of competence and efficiency at work.

High scores (above the 75th percentile) in *emotional exhaustion* and *depersonalization*, and low scores (below the 25th percentile) in *personal fulfillment* define professional burnout syndrome.

Quantitative analysis

To perform a comparative analysis of the three applications, the Wilcoxon signed-ranks test was chosen with a significance level of 5%.

Collection of qualitative data

Self-reporting was used as a method of data collection. The participants wrote a reflective testimony that enabled textual expressions that revealed personal experiences throughout the intervention to be captured.

Qualitative analysis

The *qualitative content analysis technique focused on the grammatical level* was used, through the investigation of Mayring's thematic units (as cited in Cáceres, 2003).

The self-reported testimonies are classified into units of content analysis, which allowed classification codes to be obtained that refer to many of the areas addressed in the intervention and measured in the test.

<div style="text-align:center">Results</div>

Quantitative analysis

A summary of the results obtained in the three applications of the tests' battery is shown (Table B1, Appendix B). The results of every aspect of well-being are associated with the reflective testimonies below.

Well-being general dimensions.

Psychological well-being (Table B2, Appendix B). Teachers showed a high baseline in all dimensions. T2 shows statistically significant increases in three of the six variables: self-acceptance, positive relationships, and personal growth.

The increase in *self-acceptance* may indicate that, by the end of the intervention, the teachers show a greater positive attitude towards themselves, greater acceptance of both their positive and negative dimensions, and a valuation of their past.

The variation in *positive relationships* may reveal that the participants are better able to create close and warm relationships, and achieve greater empathy and concern for the well-being of others. Many of the teachers refer to these achievements in their testimonies: «This activity has given me a lot to improve human relationships with the people with whom I interact on a daily basis ... and to contribute to the well-being of others» (Teacher 06 Subsidized Private School). «I feel like I can communicate much better with my partner» (Teacher 08 Subsidized Private School).

The increase in the *personal growth* variable indicates a greater sense of continuous progress, greater openness to new experiences, and an appreciation of their own positive changes.

In their reflective testimonies, many participants mention a sense of personal growth referring to the empowerment generated by self-knowledge and the use of tools to enhance character and well-being. «I realize how much they have helped me to the self-discovery of my capabilities» (Teacher 08, Subsidized Private School).

The sessions have allowed me to stop in my daily life, thinking about the times during the day that have made the difference and which have led to growth in me, not only in relation to my teaching work, but in personal and family growth and development (Teacher 13, Subsidized Private School).

The *self-acceptance* dimension underwent the largest change and maintained a positive variation in the third measurement. The progress in the dimensions of *positive relationships* and *personal growth* were not sustained over time.

Happiness (Table B3, Appendix B). On this scale the baseline levels were also raised. The lowest index was *pleasant life*. Significant increases were observed in this dimension, from which it is evident that, at the end of the intervention, the participants would be more interested in seeking and enjoying the hedonic pleasures such as laughing, savoring a meal, dancing, etc.

Two testimonies reflect something similar:

In my case, as a teacher, one devotes all free time to the school and we put ourselves aside, so one is very exhausted a lot of times, with very low spirit, but when I set work aside for a few minutes and spend a little time on something I like, it has changed my way of thinking and looking at life (Teacher 15, Subsidized Private School).

I valued more meaningful life to feel well. However, understanding these three pillars; I think I must worry about developing the other two areas, especially pleasure, which often stimulates a degree of guilt in me (Teacher 24, Subsidized Private School).

Significant positive changes are maintained up to two months after the intervention.

As regards engaged life and meaningful life, there were no changes in the test; however, in the testimonies there is an appreciation in the search for activities that contribute *flow*, that is, activities that put our talents into practice and provide deep enjoyment, leading one to lose track of time when they are made. «Thanks again for making me discover what that flow was that I'd forgotten and the importance of picking it up again» (Teacher 26, Subsidized Private School). «Doing aerobics twice a week, it's a time when only *I* exist; I forget about work, the routine, the children, and, why not, my work as a mom» (Teacher 10, Subsidized Private School).

Well-being specific dimensions.

Positivism (Table B4, Appendix B). The baseline level of the participant *negative affect* is higher than the descriptive statistics of Robles and Paez (2003). However, both correspond to a medium level. The positive affect is higher. Teachers reported a significant decrease in negative affect and a significant increase in positive affect. This would indicate that, after the workshop, they perceive a lower degree of moods with unpleasant subjective content (anger, sadness, anxiety, etc.). Also, and despite both dimensions being uncorrelated, the survey respondents would perceive an improvement in their moods and emotions with pleasant subjective content (joy, affection, enjoyment, etc.).

The majority of the testimonies reflect something consistent, being the element mentioned most: «But today, by performing the exercise to write down and relive the positive things from the day, it's much more motivating to face tomorrow» (Teacher 02, Subsidized Private School). «Doing the exercise to write down three good things that happened to me changed my view of the day and made me value more the pleasant moments that I have» (Teacher 08, Subsidized Private School).

The changes returned to similar levels to the baseline level on the third measurement.

Optimism (Table B5, Appendix B). In this test, the teachers reported very high baseline rates and no significant changes were observed when comparing the different times. However, several teachers reported achievements related to an optimistic vision on life: «It comforts me to feel that I can take the good things there are in my environment and favor them over the negative …» (Teacher 31, Subsidized Private School). «The fact that it's extremely important to see each day as a new opportunity to be happy will include things that overwhelm me [sic], but the joys and learning will always be greater» (Teacher 02, Subsidized Private School).

Hope (Table B6, Appendix B). The participants showed high baseline rates on the hope scale. Even so, they achieved significant progress in the dimensions of *active planning towards achievement* and *total hope*. This would indicate that after the intervention they would have greater confidence that plans can be created to achieve what they propose and they would be better able to self-motivate to achieve their goals thinking of themselves as agents of change.

The changes returned to similar levels to the baseline on the third measurement.
There were no references to these variables in the testimonies.

Dimensions related to the job.

Employees Engagement (Table B7, Appendix B). On the Q12 scale, the participants are actively engaged with their work in T1 and showed moderate increases in T2. However, when comparing T1 and T3 there was statistically significant progress. This would reflect that participants link work with values or objectives that are not instrumental, such as remuneration, giving a transcendent meaning to their work, in line with the points made in some reflections:

I want to thank you for every moment, word and encouragement that you gave us to continue. The road to be a teacher isn't easy … but even so, it's a road that's worth traveling, and not just for us, but for the children who need us (Teacher 26, Subsidized Private School).

My passion is theater, art, music, literature and teaching. In this career I can be all this and more ... I can develop as a professional and as a person, leaving a piece of me in a clean and pure soul, as children are (Teacher 03, Subsidized Private School).

Burnout (Table B8, Appendix B). In the Maslach Burnout Inventory (MBI) test for teachers, the participants reported medium level of emotional exhaustion that almost doubled the results of teachers of two groups studied in Chile (Darrigrande & Olivares, 2009).

Nevertheless, no cases of burnout were identified, since all of them reported low levels of depersonalization and high levels of personal fulfillment.

A favorable change was observed in the dimensions *personal fulfillment* and *depersonalization* in T2, which indicates that teachers feel more competent, give a better evaluation of their own work, and report better connections with and sensitivity towards their students. This is consistent with the observations in some testimonies associated with positivism: «I've reached the point of sharing this as a happiness experiment with my students and the people close to me» (Teacher 24, Subsidized Private School). «In my job I teach the students and my loved ones to celebrate achievements and triumphs being active-constructive» (Teacher 07, Subsidized Private School).

Both parameters declined to baseline levels in T3. In the case of *emotional exhaustion*, this remained stable in T2 and saw a significant drop in T3, which reveals that teachers would have reduced their emotional tiredness two months after the intervention.

Qualitative analysis (Table B9, Appendix B)

The 27 testimonies were divided into 73 units of analysis, from which 7 classification codes were extracted to identify the most important aspects for participants, or where they felt that the intervention had contributed to their lives. The topics most frequently mentioned were:

• Positivism: they talk about focusing on the positive aspects of life over negative ones (25/73).
• Personal relationships: they express that rich and satisfactory social relationships exist or are being sought (16/73).
• Personal growth: they refer to general empowerment due to self-knowledge and the use of tools to strengthen character and well-being (11/73).
• Engaged life: they mention the benefit of having reconnected with activities that contribute *flow* (8/73).
• Optimism: they show a more positive view of life or the intention of focusing more on that (8/73).
• Other classification codes mentioned were: meaningfulness at work (3/73) and pleasant life (2/73).

It should be mentioned that in most of the testimonies the participants refer once to the classification codes; however, in the case of optimism and positivism, some of them refer to the same code twice.

Conclusions

The main aim of this study was to determine whether it is possible to improve the well-being of teachers by conducting a group intervention built on the bases of Neuroscience and Positive Psychology, and adapted to the needs of the teachers. Using a wide range of quantitative tools and contrasting the results with a qualitative analysis, the feasibility of achieving a significant positive impact could be demonstrated, both on subjective well-being and psychologically, through a low-cost and easily replicated intervention.

A cognitive-experiential module was designed and implemented, which was improved based on a pilot application and analysis supported by the participatory education model of Vella (2000). This intervention placed special emphasis on the neurobiological support of the practical strategies adopted in each session.

The evaluation of teachers' well-being was made using an extensive battery of validated and reliable tests which were done face-to-face, thus reducing the possibility of errors.

It was determined that, on average, participants had high levels of well-being at the start of the intervention compared with descriptive statistics, benchmarks and/or the results observed in other groups (Bitran, Pedrals, & Rigotti, 2011; Díaz et al., 2006; Robles & Páez, 2003; Vuyk, 2013). As mentioned in the reference framework, many teachers, both in Chile and abroad, develop high levels of burnout and stress. None of the teachers in the group studied had this syndrome, but they did have medium levels of emotional exhaustion that were nearly double the levels of similar groups studied in Chile (Darrigrande & Olivares, 2009). This is consistent with the studies of Unesco (2006), which indicate that 63 % of Chilean teachers have high or medium emotional exhaustion due to overload of work activities —being this level the highest among the OECD countries— which provokes feelings of loss of their time control.

The participants increased their well-being by a statistically significant amount by the end of the intervention in 10 of the 19 dimensions studied: *self-acceptance, positive relations, personal growth, pleasant life, negative affect, positive affect, personal fulfillment, depersonalization, active planning towards achievement, and total hope*.

It can be assumed that the changes experienced relate to the intervention, since they correspond to the topics covered in the intervention and the participants directly refer to them in their reflections. The results were compared with the classification codes obtained from the qualitative analysis of the testimonies, which in many cases were consistent. However, being a non-experimental study, with no control group and a non-random sample, they could be subject to confounding variables.

By observing the sustainability of the change in well-being after two months, it is possible to determine that most of the progress recorded (8/10) returned to levels similar to the baseline, but the *self-acceptance* (Ryff) and *pleasant life* (happiness) variables remained high.

The module can be replicated, doing the necessary modifications to adapt it to other teacher groups. In this regard, it is important to state that the development of interventions of this kind, as mentioned in certain studies that recommend them, does not require high investment (Alvarado, Valdivia, & Piñol, 2010).

Discussion

The participating teachers reported higher initial levels of well-being on average, which means greater difficulty to achieve changes, although these were indeed reached by the end of the module. The advances were not sustained over time; possibly because the participants failed to consolidate the habits sufficiently in seven weeks to maintain the levels reached. This is consistent with observations in other experimental positive interventions based on Positive Psychology, as stated by Vázquez, Hervás, and Ho (2006), who demonstrate that the efficacy and duration of the effects of an intervention depend partly on the frequency and intensity of the strategies used, as cited by Arguís, Bolsas, Hernández, and Salvador (2012), in the *Aulas Felices* (Happy Classrooms) Program. For this reason, researchers in the UK Resilience Programme suggest follow-up work to maintain the skills acquired (Challen, Noden, West, & Machin, 2011).

Although the levels return to baseline ranges, the reports suggest that teachers internalized concepts of well-being and are motivated to continue practicing strategies to self-manage their emotional health.

If we analyze the achievements of the intervention in detail, they are consistent with the themes and exercises that were done during the weeks that the module took place.

The psychological well-being of the teachers showed interesting progress. The most significant change took place in the variable *self-acceptance*, on which work was done indirectly during the course of the entire module. The participants gradually gained more in-depth understanding of themselves through exercises and reflection. Some moments were particularly relevant: in the 4th session («Optimism») they were able to recognize their style of causal attributions and practiced strategies to make them more optimistic. In the 5th session («Thought traps»*)* they learned to recognize their negative, limited, or catastrophic thoughts and give them new meanings. Profound self-knowledge and the possibility of changing negative habits thanks to neuroplasticity can lead to greater *self-acceptance*, both of our positive characteristics and our negative ones, which may not seem so adverse since it is possible to improve them. These factors may also promote progress in the variable *personal growth*. The participants would feel more empowered and capable of creating the necessary changes to continue developing in every area: work, personal, social, etc. Self-acceptance continued to show increases in the third measurement. This would be an important achievement by the intervention, since having positive attitudes to oneself is one the key characteristics of optimal psychological functioning (Ryff & Singer, 1998).

There were also improvements in *positive relationships,* possibly due to the work done in sessions addressing the theory of PERMA (5th and 6th) and energy (7th). The participants knew and valued the importance of investing time and effort in developing better relationships with family, friends, and at work as a source of energy and well-being. They also practiced communication strategies to enrich relationships with others.

The results of the quantitative analysis were consistent with the testimonies, as the second most frequently mentioned dimension was *personal relationships,* and the third was *personal growth*.

Another significant change that lasted over time was *pleasant life* from the Test on Approach to the Basic Elements of Happiness (PEM). This is interesting, since it corresponds to hedonic well-being and would be complementary to the Ryff's eudaimonic well-being. This variable showed the lowest result in the baseline test and *meaningful life* produced the highest. This would indicate that the participants attributed more importance to a life orientated towards transcendent aspects and less oriented towards everyday pleasures. During the sessions, it was underlined that eudaimonic dimensions are relevant and produce a profound well-being, but positive emotions contributed by hedonic pleasures are also needed and should be included in life. Several of the participants said they had restarted activities that brought them great satisfaction, such as dancing, singing, and cooking. The results obtained in this test and reported verbally by the participants could not be observed clearly in the reflections, where pleasant life received only two mentions.

Among the greatest changes in the module were the advances in the Modified Scale of Positive and Negative Affect (PANAS). A significant increase was observed in *positive affect* (positive emotions and

feelings such as excitement, motivation, pride) and a sharp decline in *negative affect* (negative emotions and feelings such as fear, guilt, or anger). This is consistent with the testimonies, where positivism was the aspect most often mentioned. These changes are probably largely due to the exercise that the participants carried out from the second session: to write down three positive things every night that happened to them that day. This task is intended to produce a regular review of the day and observe that there are always favorable events, which are often obscured by negative events that remain in the memory. This exercise is very effective, and the return to baseline levels seen in the third measurement could be due to teachers not continuing to practice it after the end of the module.

The participants reported no progress in *optimism*, as measured by the Life Orientation Test-Revised - LOT-R. Unlike the previous variables, optimism is a character trait determined by genetic factors, family models, and the example of educators, and it is therefore difficult to alter. However, the participants were optimistic from the start, a positive condition for their students, who are influenced by the models that they constitute.

Despite the high levels shown initially for both variables of the Hope Scale for Adults, namely *active planning towards achievement* and *positive energy towards achievement*, by the end of the intervention the participants had achieved significant progress in the former and in *total hope*, expressing greater confidence that they were able to generate and accomplish the plans proposed.

On the Q12 Employee Engagement Scale, the 27 teachers started with high levels of commitment to their work and institution, and gradually increased them in the successive measurements. The changes were significant when comparing the first evaluation with the third. The explanation for this may lie in the difficulty of achieving progress in an aspect that is already high, in addition to the fact that this variable requires a maturation time that enables a retrospective look to assess the work done and the relationship with management and peers.

The MBI test was used to determine whether the participants had burnout syndrome. No cases were found, so, despite being emotionally tired, they had high levels of *personal fulfillment* and low levels of *depersonalization*. They initially reported an average level of *emotional exhaustion*, which would indicate that their emotional resources were diminished and/or they could feel emotionally exhausted by working conditions. Subsequently, they reported a gradual decline in these levels in the following two measurements, with a significant variation between the first and the third. However, this achievement cannot be attributed solely to the effect of the intervention, since it also could be influenced by the vacation period between the second and the third measurement, which would have allowed teachers to recover from the emotional fatigue involved in their work.

The variable *personal fulfillment* showed high levels in the baseline measurement, indicating that the participant felt competent and evaluated their work positively. Even so, this variable was the one that showed the greatest variation between the first and second measurements. This variation could be determined by certain dynamics in which teachers recalled significant moments of their work and due to the self-knowledge and awareness that one can always improve. The teachers also had low levels of *depersonalization* from the beginning of the workshop. Those levels declined further after the intervention, probably because of the understanding gained regarding the importance of interpersonal relationships and the *Losada ratio*, which states that any human relationship should have more positive interactions than negative ones, with a minimum of 3:1 (Fredrickson, 2010). This could help teachers interact more positively with their students and achieve greater connections with them.

All the factors described above suggest that the changes experienced by the participating teachers are the consequence of the work done during the intervention. However, in order to optimize the time available and create a climate of confidence, a team of teachers who belongs to the same establishment was selected as a sample. The fact that this group was not random is a limitation of the study, as is its size, since it does not represent the national teaching population.

It should be noted that the high baseline levels achieved by the participants could be due to social desirability, which is the tendency of the individual to provide a socially improved image of themselves. According to the researchers Darrigrande and Olivares (2009), it is likely that teachers fear adverse outcomes in the educational-organizational context or want to see themselves as capable of meeting the

demands involved in their work. This situation has already been described in other groups of teachers in Chile, and the authors recommend supplementing the quantitative data with qualitative methods to investigate this mechanism. The qualitative analysis conducted in this study does not permit to detect the presence of social desirability; however, it does help to observe aspects of the intervention that were more significant.

Through this module, the participants achieve a level of knowledge that would allow them to modify proposed activities and create their own strategies to raise their personal well-being.

The intervention devised can play a preventive role in teacher disorders by strengthening the individual with a wide range of theoretical knowledge and practical strategies of well-being that they can change and adapt to their needs. To consolidate this effect, it would be necessary to incorporate a maintenance program that would allow teachers to strengthen learning of strategies and convert them into habits of well-being.

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Appendix A

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Appendix B

Tables

Table B1
Summary of results test 1, 2 and 3, difference T2/T1, T3/T1

Test	Variable	Test 1 ± DS	Test 2 ± DS	Test 3 ± DS	Δ T2-T1 ± DS	W	H	Δ T3-T1 ± DS	W	H
Ryff	Self-accept.	4.98 ± 0.65	5.27 ± 0.53	5.29 ± 0.50	0.29 ± 0.57	0.022	re	0.32 ± 0.55	0.011	re
	Pos. Relat.	5.05 ± 0.81	5.27 ± 0.77	5.11 ± 0.79	0.22 ± 0.53	0.049	re	0.08 ± 0.64	0.704	ap
	Autonomy	4.48 ± 0.78	4.53 ± 0.81	4.69 ± 0.71	0.08 ± 0.57	0.626	ap	0.12 ± 0.74	0.346	ap
	Env. mastery	4.63 ± 0.65	4.98 ± 0.59	4.90 ± 0.70	0.35 ± 0.81	0.054	ap	0.23 ± 0.77	0.233	ap
	Purp. in life	5.12 ± 0.66	5.27 ± 0.62	5.40 ± 0.49	0.15 ± 0.56	0.146	ap	0.26 ± 0.52	0.050	ap
	Pers. growth.	5.48 ± 0.69	5.72 ± 0.39	5.49 ± 0.57	0.25 ± 0.59	0.035	re	0.03 ± 0.97	0.930	ap
PEM	Engaged life	3.47 ± 0.52	3.58 ± 0.57	3.72 ± 0.63	0.10 ± 0.62	0.408	ap	0.23 ± 0.73	0.176	ap
	Meaning. life	3.90 ± 0.60	4.09 ± 0.63	4.18 ± 0.58	0.21 ± 0.68	0.055	ap	0.20 ± 0.49	0.081	ap
	Pleasant life	3.23 ± 0.72	3.52 ± 0.69	3.49 ± 0.56	0.30 ± 0.63	0.022	re	0.30 ± 0.65	0.042	re
PA NAS	Neg. affect	22.19 ± 6.65	20.22 ± 6.15	19.35 ± 6.39	-1.96 ± 3.63	0.008	re	-1.48 ± 4.40	0.129	ap
	Pos. affect	40.19 ± 6.15	42.70 ± 5.16	42.74 ± 6.52	2.52 ± 4.67	0.006	re	2.13 ± 4.87	0.058	ap
O	Optimism	18.30 ± 3.04	19.00 ± 3.01	18.65 ± 2.98	0.70 ± 2.92	0.227	ap	0.26 ± 3.57	0.822	ap
MBI	Emot. exhau.	28.41 ± 11.09	25.48 ± 11.26	21.57 ± 6.64	-2.93 ± 7.77	0.088	ap	- 5.74 ± 7.57	0.004	re
	Pers. fulfill.	40.00 ± 4.88	42.30 ± 3.91	41.04 ± 4.99	2.30 ± 3.36	0.002	re	0.74 ± 3.78	0.511	ap
	Deperson.	6.96 ± 6.21	4.56 ± 4.70	6.00 ± 4.36	-2.41 ± 5.38	0.025	re	-1.13 ± 4.99	0.333	ap
Q 12	Engagement	4.20 ± 0.46	4.28 ± 0.67	4.36 ± 0.52	0.08 ± 0.52	0.154	ap	0.20 ± 0.54	0.039	re
Hope	Pos. energy	27.00 ± 3.53	27.78 ± 2.71	27.87 ± 3.05	0.78 ± 2.06	0.088	ap	0.91 ± 2.35	0.121	ap
	Active plan.	27.03 ± 3.85	28.44 ± 3.38	27.70 ± 3.84	1.41 ± 3.39	0.042	re	1.09 ± 4.14	0.164	ap
	Total hope	54.04 ± 6.83	56.22 ± 5.75	55.57 ± 5.88	2.19 ± 4.59	0.032	re	2.00 ± 5.71	0.088	ap

Note: re = null hypothesis rejected, ap = null hypothesis approved.

Table B2
The Ryff Scales of Psychological Well-Being T1, T2 and T3, difference T2/T1, T3/T1

Test	Variable	Test 1 ± DS	Test 2 ± DS	Test 3 ± DS	Δ T2-T1 ± DS	W	H	Δ T3-T1 ± DS	W	H
Ryff	Self-acc.	4.98 ± 0.65	5.27 ± 0.53	5.29 ± 0.50	0.29 ± 0.57	0.022	re	0.32 ± 0.55	0.011	re
	Pos. Relat.	5.05 ± 0.81	5.27 ± 0.77	5.11 ± 0.79	0.22 ± 0.53	0.049	re	0.08 ± 0.64	0.704	ap
	Autonomy	4.48 ± 0.78	4.53 ± 0.81	4.69 ± 0.71	0.08 ± 0.57	0.626	ap	0.12 ± 0.74	0.346	ap
	Env. Mast.	4.63 ± 0.65	4.98 ± 0.59	4.90 ± 0.70	0.35 ± 0.81	0.054	ap	0.23 ± 0.77	0.233	ap
	Purp in life	5.12 ± 0.66	5.27 ± 0.62	5.40 ± 0.49	0.15 ± 0.56	0.146	ap	0.26 ± 0.52	0.050	ap
	Per. Grow.	5.48 ± 0.69	5.72 ± 0.39	5.49 ± 0.57	0.25 ± 0.59	0.035	re	0.03 ± 0.97	0.930	Ap

Note: In each category, the average of the scores can vary from a minimum of 1.0 to a maximum of 6.0. Re = null hypothesis rejected, Ap = null hypothesis approved.

Table B3
Test on Approach to the Basic Elements of Happiness (PEM) T1, T2 and T3, difference T2/T1, T3/T1

Test	Variable	Test 1 ± DS	Test 2 ± DS	Test 3 ± DS	Δ T2-T1 ± DS	W	H	Δ T3-T1 ± DS	W	H
PEM	Eng. life	3.47 ± 0.52	3.58 ± 0.57	3.72 ± 0.63	0.10 ± 0.62	0.408	ap	0.23 ± 0.73	0.176	ap
	Mean. life	3.90 ± 0.60	4.09 ± 0.63	4.18 ± 0.58	0.21 ± 0.68	0.055	ap	0.20 ± 0.49	0.081	ap
	Pleas. life	3.23 ± 0.72	3.52 ± 0.69	3.49 ± 0.56	0.30 ± 0.63	0.022	re	0.30 ± 0.65	0.042	re

Note: In each category, the average of the scores can vary from a minimum of 1.0 to a maximum of 5.0. Re = null hypothesis rejected, Ap = null hypothesis approved.

Table B4
Modified Scale of Positive and Negative Affect (PANAS) T1, T2 and T3, difference T2/T1, T3/T1.

Test	Variable	Test 1 ± DS	Test 2 ± DS	Test 3 ± DS	Δ T2-T1 ± DS	W	H	Δ T3-T1 ± DS	W	H
PANAS	Neg. affect	22.19 ± 6.65	20.22 ± 6.15	19.35 ± 6.39	-1.96 ± 3.63	0.008	re	-1.48 ± 4.40	0.129	ap
	Pos. affect	40.19 ± 6.15	42.70 ± 5.16	42.74 ± 6.52	2.52 ± 4.67	0.006	re	2.13 ± 4.87	0.058	ap

Note: In each category, the average of the scores can vary from a minimum of 10 to a maximum of 50. Re = null hypothesis rejected, Ap = null hypothesis approved.

Table B5
Life Orientation Test-Revised (Lot-R) T1, T2 and T3, difference T2/T1, T3/T1

Test	Variable	Test 1 ± DS	Test 2 ± DS	Test 3 ± DS	Δ T2-T1 ± DS	W	H	Δ T3-T1 ± DS	W	H
O	Optimism	18.30 ± 3.04	19.00 ± 3.01	18.65 ± 2.98	0.70 ± 2.92	0.227	ap	0.26 ± 3.57	0.822	ap

Note: In each category, the average of the scores can vary from a minimum of 0 to a maximum of 24. Re = null hypothesis rejected, Ap = null hypothesis approved.

Table B6
Snyder's Adult Hope Scale T1, T2 and T3, difference T2/T1, T3/T1

Test	Variable	Test 1 ± DS	Test 2 ± DS	Test 3 ± DS	Δ T2-T1 ± DS	W	H	Δ T3-T1 ± DS	W	H
Hope	Pos. energy	27.00 ± 3.53	27.78 ± 2.71	27.87 ± 3.05	0.78 ± 2.06	0.088	ap	0.91 ± 2.35	0.121	ap
	Act. plan.	27.03 ± 3.85	28.44 ± 3.38	27.70 ± 3.84	1.41 ± 3.39	0.042	re	1.09 ± 4.14	0.164	ap
	Total hope	54.04 ± 6.83	56.22 ± 5.75	55.57 ± 5.88	2.19 ± 4.59	0.032	re	2.00 ± 5.71	0.088	ap

Note: In *positive energy* and *active planning,* the average of the scores can vary from a minimum of 4 to a maximum of 32.

In *total hope* the average scores can vary from a minimum of 8 to a maximum of 64. Re = null hypothesis rejected, Ap = null hypothesis approved.

Table B7
Q12 employee engagement scale T1, T2 and T3, difference T2/T1, T3/T1

Test	Variable	Test 1 ± DS	Test 2 ± DS	Test 3 ± DS	Δ T2-T1 ± DS	W	H	Δ T3-T1 ± DS	W	H
Q12	Engagement	4.20 ± 0.46	4.28 ± 0.67	4.36 ± 0.52	0.08 ± 0.52	0.154	ap	0.20 ± 0.54	0.039	re

Note: In each category, the average of the scores can vary from a minimum of 1.0 to a maximum of 5.0. Re = null hypothesis rejected, Ap = null hypothesis approved.

Table B8
Maslach Burnout Inventory (MBI) for TeachersT1, T2 and T3, difference T2/T1, T3/T1

Test	Variable	Test 1 ± DS	Test 2 ± DS	Test 3 ± DS	Δ T2-T1 ± DS	W	H	Δ T3-T1 ± DS	W	H
MBI	Emot. exh.	28.41 ± 11.09	25.48 ± 11.26	21.57 ± 6.64	-2.93 ± 7.77	0.088	ap	- 5.74 ± 7.57	0.004	re
	Pers. fulfill.	40.00 ± 4.88	42.30 ± 3.91	41.04 ± 4.99	2.30 ± 3.36	0.002	re	0.74 ± 3.78	0.511	ap
	Depers.	6.96 ± 6.21	4.56 ± 4.70	6.00 ± 4.36	-2.41 ± 5.38	0.025	re	-1.13 ± 4.99	0.333	ap

Note: In *emotional exhaustion* the minimum score is 0 and the maximum is 54. In *personal fulfillment* the minimum score is 0 and the maximum is 48. In *depersonalization* the minimum score is 0 and the maximum is 30. Re = null hypothesis rejected, Ap = null hypothesis approved.

Table B9
Summary of codes and analysis units

Classification codes	N° of analysis units
Positivism	25
Optimism	8
Engaged life (*flow*)	8
Personal relationship	16
Meaningfulness at work	3
Personal growth	11
Pleasant life	2
Total	73