

## POSITIVE CLINICAL PSYCHOLOGY AND POSITIVE TECHNOLOGIES

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*La Psicología Clínica ha avanzado notablemente en los últimos 100 años y en estos momentos disponemos ya de tratamientos psicológicos basados en la evidencia. Ahora bien, esto no es óbice para seguir mejorando esta disciplina. En los últimos 20 años se han producido dos importantes desarrollos que han resultado beneficiosos para este campo. Por una parte, lo que ha supuesto el movimiento de la Psicología Positiva y su cristalización en la Psicología Clínica Positiva. Por otra, la introducción de las Tecnologías de la Información y la Comunicación (TICs) para mejorar la práctica clínica cotidiana. En este trabajo se abordan estos avances y se presenta un nuevo campo de estudio que intenta estrechar lazos y tender puentes entre todos ellos: las Tecnologías Positivas. Se analizan las distintas posibilidades y las ventajas que este binomio puede implicar y se revisan una serie de trabajos en los que se utilizan Tecnologías Positivas.*

**Palabras clave:** Psicología clínica positiva, Tecnologías de la información y la comunicación, Tecnologías positivas, Tratamientos psicológicos.

*Clinical psychology has advanced significantly in the past hundred years, and we now have evidence-based psychological treatments. However, this does not mean that there is no room for further improvement in this discipline. In the past twenty years, two important developments have been identified as being beneficial for this field: on the one hand, the Positive psychology movement and its crystallization in the discipline of positive clinical psychology; on the other, the introduction of information and communication technologies (ICTs) to improve daily clinical practice. In this paper, we address these developments and present a new field of study that attempts to strengthen the ties and connections between them: the field of positive technologies. Furthermore, the different possibilities and advantages of this field are analyzed. In doing so, we present a number of studies in which positive technologies are used from this perspective.*

**Key words:** Positive clinical psychology, Information and communication technologies, Positive technologies, Psychological treatments.

**W**e have made great progress in understanding and treating mental disorders. In terms of methodology, we have to mention Pinel and his moral treatment, the approach of the psychogenic hypothesis by Freud, the contribution of phenomenology by Brentano and Husserl, and existentialism by Kierkegaard, Heidegger and Jaspers, as well as the invaluable contribution of Pavlov with his experimental work on conditioned reflexes and its subsequent influence on Russian reflexology. Other methodologies deserve special mention, such as what has been called the antechamber of behavioral therapy (Kazdin, 1978) and its implementation in the 1960s with the progress made in South Africa by Wolpe, in the United States by Skinner, and in England by Eysenck, Rachman and the whole Maudsley Hospital group. All of these forerunners laid the groundwork for the development of the current evidence-based psychological treatments, fundamental tools in the

field of clinical psychology. Since then, and throughout the twentieth century, numerous studies have been conducted showing the effectiveness of certain psychological procedures for the treatment of various mental disorders. Some important authors have been Wolpe, Kelly, Lazarus, Skinner, Rachman, Marks, Beck, Seligman, Mahoney, Barlow, Salkovskis, Clark, etc., and their work has led to the consolidation of what today is called cognitive-behavioral therapy, the dominant trend and the one that has achieved the most prestige in the field of clinical psychology.

However, despite this progress, the question arises: is it possible to improve this discipline? The answer is a resounding "yes", and we will focus on this in the current paper. On the one hand, we will discuss what it has meant to take into account the contributions of positive psychology and its crystallization in what is known as positive clinical psychology (PCP). On the other, we will describe the incorporation of information and communications technology (ICT) in everyday clinical practice. Based on these developments, we present a new field of study that attempts to strengthen ties and build bridges among all of them: the field of positive technologies (PT).

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## POSITIVE CLINICAL PSYCHOLOGY

Since its inception, clinical psychology has focused fundamentally on the *negative*, that is, the pathological, the abnormal, problems, and disorders. Basically, it was interested in knowing what was wrong in the brains of people, in their behavior, in their relationships, and in their emotional lives. The aim was to find answers to burning issues that destroyed or deteriorated the lives of those who suffer: Why is Ana failing? Why is John feeling bad? Why does Marta hurt herself? Why does Jose mistreat others? Or why Teresa does want so badly to kill herself?

This state of affairs changed with the emergence of the movement known as positive psychology, led by Seligman in the 1990s, which has undergone a huge boom. It is necessary to recognize the merits of Seligman and his contributions to clinical psychology. On the one hand, his work on learned helplessness considerably advanced the understanding of depression (Seligman, 1972); on the other, during his presidency of the APA in 1993, the evidence-based psychological treatment movement began. Today, Seligman is leading a revolution within traditional clinical psychology, with the interest no longer focusing only on problems, weaknesses, trauma, or inferiorities. He proposes that the time has come to address, with the same scientific rigor as always and using the same methodology, pleasant emotions, growth, the ability to cope and improve, the pursuit of happiness, virtues, human potentialities, strengths, and positive character traits, among others.

Positive clinical psychology (PCP) is not intended to supplant the knowledge of traditional clinical psychology about human suffering and disorders. Its aim is to achieve a more balanced and comprehensive understanding of human experience. That is, it considers the complex set of determinants that make up this experience. If we are interested in understanding the behavior of human beings, attention should be paid to both suffering and happiness –to sadness and joy– in order to better understand how to reduce the former and to enhance the latter, because the procedures in each case are not necessarily the same (Seligman, Steen, & Peterson, 2005). There are two basic and complementary strategies for improving the human condition: to try to eliminate, improve or alleviate the negative aspects that disturb us; or, on the contrary, to try to strengthen anything that is positive. Traditional clinical psychology has generally focused on the former option, whereas PCP focuses on the latter. PCP argues that psychological treatments should not only aim to repair what is damaged or make symptoms disappear, but it should also enhance what is working well and create new conditions that prevent other problems from arising in the future (Seligman & Csikszentmihalyi, 2000). This focus is closely related to the real possibility of carrying out *prevention*. Is it possible to reinforce strengths and create the skills and competencies that can really *protect* people? In this regard, it is worth mentioning the concept of *salutogenesis* by Antonovsky,

and what this author called *the resources of generalized resistance* (Antonovsky, 1979), in relation to the importance PCP gives to certain human and social forces that act as protective factors against mental illness: bravery, *courage*, optimism, interpersonal skills, hope, honesty, perseverance, the ability to live mindfully, etc.

Although it is not feasible to thoroughly address the various research topics that have been carried out in PCP, the broaden-and-build theory by Fredrickson (1998, 2001) must be mentioned here. This theory suggests that positive emotions play an important role in evolution: they expand our intellectual, physical, and social resources, and make them more durable. They increase the reserves we can use when presented with a threat or an opportunity. Emotions such as joy, happiness, or interest expand our awareness and enhance the appearance of original thoughts. That is, *they open, expand, and help to generate reserves of psychological resources*. Over time, behavioral repertoires of mental skills and resources are developed. This is in stark contrast to the effects of negative emotions, which promote more immediate behaviors aimed at survival (e.g., the anxiety of emotion results in fight or flight behavior). Positive emotions have no immediate survival value because they do not focus on immediate needs and stressors. However, obviously, the new skills and resources promoted by positive emotions also help us in some way to enhance survival in the medium and long term. In this regard, we must also remember the contribution of Frankl in his approach to speech therapy (1967), emphasizing the importance of a *sense of humor* in helping to strengthen the capacity of *distancing* the human being from problems and negative things. In sum, it appears that, to achieve psychological well-being and promote survival, it is of the utmost importance to learn to smile, play, and enjoy oneself.

In this context, Richard Layard also wrote about happiness (Layard, 2005) shortly before proposing the approach that led to the movement of *Improving Access to Psychological Therapies*. As Layard emphasized, the most important cause of human misery in industrialized countries is not poverty, but rather mental health problems. Therefore, it is not unreasonable to think that an important way to help solve these problems is by enhancing the factors and procedures that can provide well-being, joy, and happiness. Theorists who have meditated on this, such as Bertrand Russell, have been careful to stress that happiness is not related simply to hedonism and the enjoyment of material goods. As Avia and Vázquez (2008, 2011) say, happiness includes joy, but also many other emotions, some of which are not exactly positive (e.g., commitment, struggle, challenge, and even pain); and it is also possible to be satisfied overall and not feel happy, but only experience a sense of resignation with one's lot in life. Happiness is not only about experiencing desirable affective states, but also about entertaining the idea that one is on the path towards achieving



valued objectives or goals. In sum, we are indebted to Aristotelian *eudaimonia*. This central idea urges men to live according to their *daimon*, the ideal or standard of perfection to which one aspires and which gives meaning to life. This idea is quite present in the field of psychological treatments and reflected in the writings of authors with a humanistic and existential orientation, such as Rogers, Maslow and Erikson. In some way, it is also included in what are known as the new approaches to behavioral therapy (Hayes 2004; Linehan, 1993). Recently, Csikszentmihalyi (1990) delved into the study of a concept that also has points in common with these ideas, the concept of *flow*. The experience of flow involves a set of elements: the existence of a goal that involves a challenge, concentration, control, personal involvement, and an apparent lack of effort; moreover, the self seems to vanish and time stands still.

PCP has incorporated a number of extremely innovative techniques and/or exercises, e.g., savoring, gratitude, forgiveness, kindness, the generation of positive emotions, the enhancement of optimism, strengths and psychological resources, the search for meaning, training in reminiscence, exercises of projection into the future, such as imagining the “best possible me”. Moreover, many of these techniques come directly from basic experimental research (Vázquez, 2013). Examples include positive emotions (Fredrickson, Cohn, Coffey, Pek & Finkel, 2008), savoring (Quoidbach et al., 2010), forgiveness (Worthington et al., 2007), or gratitude (Emmons & McCullough, 2003). In addition, many have been tested, and there is already evidence of their effectiveness (Bolier et al, 2013; Sin & Lyubomirsky, 2009). Hopefully, in the coming years, further evidence will be accumulated to support these techniques.

In sum, PCP focuses on the scientific study of what is good or works well in people. It aims to promote well-being and happiness, and understand how factors such as optimism, love, and perseverance are generated, how originality is maintained, and how the capabilities and resources that serve to optimize life can be activated in people. In recent years, positive clinical psychology has expanded greatly, its goal being to advance the concept of health proposed by the WHO (2005): to achieve a state beyond the mere absence of disease, a state that is definable and measurable and that results in a decrease in personal and social costs and improvements in well-being and quality of life. This is an extremely exciting topic; in fact, the history of mankind is the history of coping with adversity, surviving, and continuing to enjoy every moment of the gift of life, in spite of misfortunes and loss. In this regard, a number of questions arise immediately: Why do some people survive whereas others let themselves become defeated and die (or just scrape by)? What factors affect the success or failure of the effort and glory involved in the good life? These are central topics in modern PCP, and it is what we are working on; hopefully, we will be able to find some answers.

## POSITIVE TECHNOLOGIES

In recent years, ICTs have developed at an extremely rapid pace. They have entered the field of Clinical Psychology and made notable improvements in existing psychological treatments. New terms have emerged, such as e-therapy, virtual therapy, and computerized therapy. These therapies could all be included in broader terms, such as cybertherapy, which gives its name to one of the most prestigious conferences in the field (*Cybertherapy*). In all cases, they involve the use of computers as a tool to provide support or facilitate or improve the therapy in some way. Now, when speaking of cybertherapy, we have to go beyond just the computer; we must also consider the use of any new gadget or development based on ICT that can help to improve clinical psychology in general, and psychological treatments in particular (Botella, García-Palacios, Baños & Quero, 2009). Clear examples of these technologies include virtual reality, augmented reality, Internet use, and the use of mobile devices such as the strategies of ecological momentary assessment, serious games, or the use of different types of sensors. Many of these devices have already been tested in the treatment of numerous psychological disorders, and there are review studies and meta-analyses that support their efficacy and usefulness (Opris et al, 2012; Powers & Emmelkamp, 2008; Turner & Casey, 2014).

However, despite their importance so far in the field of clinical psychology, in terms of both the incorporation of the principles of positive psychology and the progress made by the new applications based on ICT, these two research areas have been separated for a long time. To resolve this situation, the proposal is to bring together technological developments and positive psychology approaches under the name of positive technologies (PT), that is, “the scientific and applied approach that uses technology to improve the quality of our personal experience with the goal of increasing our well-being and building strengths and resilience in individuals, organizations and society” (Botella, Gaggioli, Wiederhold, Alcaniz, & Baños, 2012, pp.1; Riva, Baños, Botella, Wiederhold, & Gaggioli, 2012). Therefore, not all technologies can be included under the label of PT. To be classified as PT, they must have been conceived and designed specifically to promote *well-being* and generate *resources, strengths and resilience* in human beings. Few studies to date can be included in the conceptual framework of PT; this section will discuss some of the developments that have emerged so far.

**“Los Parques Emocionales” [Emotional Parks].-** Our group has developed a method for inducing different mood states using VR technology (Baños, Botella, Alcañiz & Liaño, 2004). Emotional parks are VR environments that incorporate various procedures for inducing moods (PIMs) (phrases of self-referral, images, videos and film clips, music, and autobiographical memory narrative) to induce joy or relaxation. In this virtual environment, some elements change depending on



the emotional state to be induced. All of the elements (colors, light effects and intensity) have been especially designed to transmit either joy or relaxation. Thus, a PT has been created that uses PIMs through virtual reality, which contextualizes the traditional strategies of emotional induction, offering the user an experience closer to the natural one. These VR-PIMs have been tested (Baños et al., 2008) and found to be capable of promoting positive moods (joy and relaxation) and decreasing negative affect, not only in emotionally balanced people, but also in individuals with high levels of sadness after a previous experimental induction of sadness.

**Butler.-** Another application has been developed, also based on PIMs, virtual reality, and different web technologies (Botella et al., 2009), designed to promote hedonic and eudaimonic well-being in older people. Butler includes tools to support the elderly and their caregivers, with the objective of improving their emotional state, giving them support, strengthening their *social capital*, and improving their quality of life (Etchemendy et al., 2011). Butler is designed to be used by three types of users: elderly people, formal caregivers, and the family. In each case, the system contains specific tools and applications (e.g., “The Book of Life” to practice reminiscence, or adapted email or videoconference procedures to break the digital divide). In addition, Butler allows two formats for its use, clinical or professional and entertainment or enjoyment. Butler has been shown to improve the emotional state of elderly people, increasing their positive emotions and reducing negative ones, and it is very well accepted by the users (Baños et al, 2012, 2014; Botella et al., 2009; Castilla et al, 2012; Etchemendy et al, 2011).

**Isla de la Relajación [Relaxation Island].-** The Riva group (Villani & Riva, 2008) has developed a positive technology also based on VR-PIMs. This application was designed to train users in relaxation procedures and help them cope with stressful situations (e.g., exam anxiety), or simply as a virtual place of peace and tranquility for enjoyment and rest. This application has been found to reduce anxiety and increase the relaxation state of the participants (Villani & Riva, 2008). The authors note that these applications may be useful in clinical practice as controlled procedures to promote the desired objectives (in this case, relaxation).

**Positive Technology Platform.-** The same group (Gaggioli et al., 2014) developed a positive technology that uses a non-immersive virtual 3D world and a series of biosensors. The goal is to help users cope with stress and promote well-being. It includes three elements. The first consists of guidelines for carrying out relaxation training in a guided way. It has a series of images, videos, and music, in addition to a narrative with guided instructions for the relaxation. The user can choose from several VR environments (a beach, a field, a forest, or a mountain). The second element involves the possibility of establishing a continuous process of biofeedback

between the user and the relaxation context, using a sensor of cardiac activity and the visualization of an increase or decrease in the size of the VR environment. The third element involves the ability to monitor and record the stress levels experienced and be aware of variations in these levels over time. The platform has been shown to decrease the anxiety/stress experienced by users and increase the feeling of relaxation and well-being after the relaxation (Gaggioli et al, 2014; Serino et al, 2014.).

**Live happy.-** This application was developed for use with the iPhone, following the suggestions of Lyubomirsky, Dickerhoof, Boehm and Sheldon (2011). It includes eight exercises: 1) Savoring the moment, 2) Remembering happy days, 3) Journal of kindness behaviors, 4) Enhancing social relations, 5) Evaluating and monitoring goals, 6) Gratitude journal, 7) Expressing gratitude personally, and 8) Thinking optimistically. The first exercises involve savoring positive experiences by “Remembering happy days”, which focuses on a personal photo album to remember good moments. The user must write a brief description of the moment experienced, trying to recover the emotions and feelings experienced. In the second exercise, “Savoring the moment,” the user is asked to take a picture of something beautiful and meaningful, and write a brief review to justify the value of the image and the feelings experienced as he or she looks at it. The next set of activities includes remembering acts of kindness and an exercise to reinforce/strengthen social relations, where the user is asked to call, send a message, or email someone significant. The next activity focuses on the review and monitoring of previously established goals to verify that they are achievable, and determine whether or not the individual is on track to achieve them. Two gratitude exercises are also included. First, the person writes in the diary one thing for which s/he should be grateful. Then, s/he also expresses gratitude personally by choosing a person to whom to express his/her gratitude either by phone or in writing. In the last exercise, focused on optimism, the user is asked to think about the best future scenario s/he can imagine and write about it. This mobile app has been shown to improve the well-being of the user (Parks, Della Porta, Pierce, Zilca, & Lyubomirsky, 2012).

**Psyfit.nl.-** is a PT designed to promote well-being and reduce depressive symptoms. It can be entirely self-applied online with no support from the therapist. It uses different exercises and encourages the person to focus on positive experiences and resources, skills, and personal strengths, rather than on personal deficiencies or health problems. It includes six modules, each of which includes exercises that have previously been tested: 1) Establishing meaningful life goals, 2) Generating positive emotions; 3) Establishing positive relationships, 4) Living in the moment (mindfulness exercises), 5) Generating optimistic thought, and 6) Life domain and the environment. Each module includes four lessons that must be practiced for a week, and





each lesson includes a brief psychoeducation training and a practice exercise. In addition, the application includes a series of videos by experts explaining the logic of the system, a personal action plan that individuals can adjust to their needs, an online community where participants can share their experiences, and a series of evaluation questionnaires that can be completed online to monitor the participants' mood (Bolier, Haverman, & Kramer et al., 2013).

**Better days.-** This PT is designed to improve daily life and enhance well-being using mobile phones. It includes 13 lessons designed to last about ten minutes and distributed over four weeks, in order for the user to learn the content and practice the exercises. In each lesson, there is a series of exercises that are quite similar to those described in other applications: gratitude, acts of kindness, optimism, coping strategies, living in the present moment, and strengths. It was recently tested in a controlled study (Drozd, Mork, Nielsen, Raeder, & Bjokli, 2014), and the results showed increases in the degree of well-being experienced by users, regardless of sex, age, or educational level.

**EARTH of Well-being.-** This PT is based on web technology and VR, and it includes three modules designed to work on different aspects of positive affection and hedonic and eudaimonic well-being. First, "Well-being Parks" is a variation of the emotional parks described above. Second, "Beauty in Nature" is an application that includes two VR environments with exercises to induce positive emotions (savoring, slow breathing, relaxation, and positive reminiscence). The third module is "The Book of Life", presented to the user as a digital personal journal where they can write and add videos and audios; the users can also view it as they complete it and rewrite or improve it as they wish. This module contains 16 exercises focused on the past and the future and organized into different chapters. Each exercise has a fundamental objective (e.g., to remember "A happy moment", "Somebody important in your life," "An achievement") or to visualize possible future targets in relation to oneself, friends, or work. It also includes a series of questions to help the user anchor the memory or visualize the future plan. Multimedia (videos, photos, music) can be used to personalize the Book of Life. **EARTH of Well-being** was developed under the Mars-500 project as a psychological countermeasure to help the astronauts cope with the difficulties during the simulated long trip to Mars (520 days). The data support the system's usefulness in increasing positive emotions and decreasing negative ones (Botella, Baños, Etchemendy, García-Palacios & Alcañiz, 2016). In addition, this PT has been tested on university students (Baños, Etchemendy, Farfallini et al, 2014), and cancer patients (Baños et al. 2013).

## DISCUSSION

In this paper, we have briefly reviewed the contributions of positive psychology to clinical psychology and, basically, the

need to pay as much attention to the positive aspects as to the negative aspects of human functioning. All of these positive factors have been shown to function as protective factors of the impact of negative events on our lives and potentially help to prevent the development of a psychological disorder (Wood & Tarrier, 2010). Therefore, it is important to study all these positive features in depth in order to generate new knowledge and design innovative interventions for the promotion of human strengths and capabilities in treating psychological problems.

Undoubtedly, we need a science that gives equal importance to the positive and negative factors and, following the same methodological approaches of traditional clinical psychology, can tell us about human potential and virtues and their effects on well-being. This science should identify which protective factors are indispensable for whom and when, and how they should be generated, applied, or enhanced in the most efficient and effective way possible.

It should also include the new possibilities that current ICTs provide, any other technological developments currently being developed, and those that may arise in the future. As experts in the use of these tools, we should be able to use all of these new gadgets to our advantage without losing sight of the full potential of the human being, by learning to use them to improve the future of the human species as much as possible.

As previously emphasized (Layard, 2005), contrary to what one might think, the cause of the greatest misfortunes in industrialized countries is not poverty. Mental health problems lead to greater suffering. If PCP, with its emphasis on studying and using human virtues and potential, is able to find better solutions to these problems, it should be welcomed. Hopefully this dream will come true, and in the coming years, we clinicians will be better prepared to carry out our work.

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