

## ¿Cómo se siente? Llaves propioceptivas de la inteligencia emocional

### How are you feeling? Proprioceptive keys of emotional intelligence

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**Resumen.** La propiocepción juega un papel crucial tanto en la expresión como en la percepción de las emociones. Estado emocional propioceptivo se manifiesta en la postura, los gestos, las expresiones faciales y el tono de voz siendo fuente de información objetiva del estado de ánimo personal. Si le preguntamos a la persona: "¿Cómo se siente?" y le responden: " Bien, gracias ", pero captamos tristeza en su voz y observamos los hombros caídos, creemos más en las claves propioceptivas que nos proporciona esta información que las palabras. Por esta razón, se presta más atención a la conducta no verbal durante la comunicación con otras personas para entender el estado real del estado de ánimo. Las emociones pueden expresarse también por los movimientos corporales en los artistas profesionales, bailarines y cantantes que sería imposible sin la propiocepción. Nuestros sentimientos hacia las personas estimadas se transmiten por la disposición motora que está a la base del afecto y es más importante que las palabras pronunciadas. Por otra parte, la propiocepción es un instrumento importante en la adquisición de nuevos hábitos, habilidades y experiencia profesional como el conocimiento "incorporado". Siendo la base de las diferencias individuales y la personalidad, constituyendo a la formación y los cambios de carácter, debidos a la repetición múltiple de nuevos (constructivos) hábitos con el fin de sustituir los antiguos (destructivos). La relación entre emociones y el equilibrio corporal referente a la salud fue descrita por investigadores recientes y clásicos con un interés del tratamiento de la persona como una unidad.

**Palabras clave:** propiocepción, personalidad y diferencias individuales, conocimiento "incorporado"

**Abstract.** Proprioception plays a crucial role in both the expression and the perception of emotions. The proprioceptive emotional state is reflected in posture, gestures, facial expressions and voice intonation, and is a highly objective source of information regarding a person's mood. If we ask someone: "How are you feeling?" and they answer: "Well, thank you", but we notice sadness in their voice and see their slumped shoulders, we trust the proprioceptive information we receive more than the person's words. For this reason we pay particular attention to non-verbal behaviour during communication in order to understand the real state of a person's mood. Emotions can also be expressed in the body movements of professional artists, ballet dancers and singers in a way that would be impossible without proprioception. We express our feelings towards our loved ones by the motor disposition which is the basis of our affection and in fact is more significant than the words we speak. Moreover, proprioception is an important instrument for acquiring new habits, skills and professional experience in the form of embodied knowledge. As one of the bases of individual differences and personality, it also contributes to character formation or change, due to multiple repetitions of new constructive habits in order to substitute the old destructive ones. The relationship between emo-

tions and body balance with regard to health has been reported by both modern and classic researchers, who have emphasized the importance of the holistic treatment of the individual.

**Key words:** proprioception, personality and individual differences, embodied knowledge, non-verbal behavior

## Introduction

In emotional education it is important to consider and understand all aspects of human behaviour in order to obtain the more objective assessment and apply further more effective strategies in re-education, coach and therapy. Since “the most important sides of things are hidden from us due to their simplicity and habituation to them” (Vittgenshtein, cited in Sacks, 1985); the aim of this article is to synthesize the information of body-emotion-mind triad connection via the sixth sense, proprioception, based on the scientific research. Moreover, we would like a brief presentation of a projective proprioceptive test, the Proprioceptive Diagnostics of Temperament and Character (DP-TC, Tous, 2008; Tous Ral, Muiños, Tous Lopez, & Tous Rovirosa, 2012; Liutsko, 2012; Tous-Ral, Muiños, Liutsko, & Forero, 2012) as a complementary tool for understanding the individual differences and personality trends, tightly related, directly or indirectly, to emotional aspects that can be used in the re-educative process in order to obtain more effective results. The information is obtained from the specific fine movement patterns, when the person cannot adjust them (proprioceptive sensory condition) since they are produced without seeing of graphical feedback and position of active hand.

Proprioception (from *proprio*” and *“ception*”) means perception of our-selves, or more exactly, perception of the relative positions of the parts of our body: “the ability of an individual to determine body segment positions and movements in space, and is based on sensory signals provided to the brain from muscle, joint and skin receptors” (Goble, 2010). Earlier it was also described as a “sense of locomotion” (by Julius Caesar in 1557); a “muscle sense” (Charles Bell in 1826); a “dark muscular sense” (Sechenov, 1863), and a “kinaesthesia” by Henry Charlton Bastian.

In the process of ontogenesis, the formation of proprioception starts in the 1<sup>st</sup>-3<sup>rd</sup> month of fetal development, and by the moment of birth the proprioceptors and cortical motor analyser reach a high degree of morphological maturity and are able to carry out their functions. The most intensive maturity growth occurs from 3 to 7-8 years old, when it attains 94-98% of the adult brain, and the volume of the cortex zones 74-84%. Morphological and functional formation of the proprioceptors in joints and tendons finishes by the age of 13-14 years, and muscle proprioceptors, by the age of 12-15 (*Detskaya medicina*, 2001). A general life-span developmental process of proprioception has a quadratic function adjustment having higher control expressed in fine motor

behaviour (precision and speed in the middle age (Liutsko, Muiños, & Tous, 2014 *in press*).

Experiments with infants (of neonatal age and 9 months) proved the existence of a link between locomotor experience and later emotional expressiveness (Uchiyama *et al.*, 2008). Other researchers demonstrated that proprioception “encodes” the affective information of movement. Neumann and Strack (2000) showed in their experiments that approach movements facilitate the positive affective concepts, while avoidance movements facilitate the negative; as well as Chen and Bargh (cited in Kimmel, 2013) found that evaluatively loaded words “love” and “hate” were related with approach and avoidance gestures respectively.

As far as the proprioceptive contribution to emotion is concerned, not only facial feedback plays an important role (skeletal muscle afferent signals from facial expressions play a causal role in regulating emotional experience and behaviour); it has also suggested that visceral feedback may have more direct effect (Buck, 1980). We perceive our self-awareness, feelings, mood, stress, energy and disposition from our physical bodies that represent all the aspects of our physiological condition (Craig, 2002).

Emotions and body states are closely interrelated, and modifications of one lead to changes in the other. Emotions change muscular tension. Muscle tone and emotional excitability were positively correlated (Gellhorn, 1970; Freeman & Kazoff, 1932; Luria, 1932). Postural changes affect and can create the corresponding emotion (Darwin, 1872). In some cultures, posture and movement, related to balance and equilibrium, have also been linked to the evaluation of character or morality: for example “the cultivation of an elegant “non-shifty” walk of a purposeful person (but also somatic agility and adaptability)” (Kimmel, 2013).

### Proprioception as a base of “embodied” knowledge

Proprioception plays a crucial role in our daily lives: visceral organ regulation (respiration, heart function, etc.) is performed on the unconscious level (Goble, Noble, & Brown, 2010). Proprioception also is a basis for acquiring the automatic or “embodied” knowledge, sometimes called *know-how* (Barsalou, 2008; Sebanz, Knoblich & Humphreys, 2008), which is the kind of practical experience, daily routine activity or professional skills. Starting to learn a new skill, we more rely on our visual guidance and attention concentrated that accompany the action; however, with repeated practice we do it on a proprioceptive level, apparently conducted on autopilot (Lee, Swinnen, & Serrien, 1994). The practical knowledge, due to proprioceptive sense, becomes “embodied” knowledge allowing us to be less stressed (pay less focussed attention or use

vision) during multiple and/or prolonged activities. This type of habits and skills commence work automatically and without our brain control.

In the experiments of the famous Russian physiologist Sechenov, carried out more than 100 years ago (Sechenov, 2013) he described how a frog without brain selectively reacted on different conditions: 1) stimuli: in case when it was pinched, the reaction was to move away, and when it was daubed with acid, the frog scrubbed the leg with another part of the body or 2) environment: being on the table, it started to crawl; however, when it was in water, the frog started to swim in order to escape from stimuli. Conclusion: it seems that a frog does not need its head (or brain) to distinguish between different stimuli or environment it was experiencing. These examples were of “rational” behaviour that worked as an automatic conditioned reflex. Corr (2010) pointed out in consideration of importance of multiple levels of behavioural control that require recognition of both (a) the relationship between automatic (reflexive or pre/non-conscious) and controlled (reflective, often with conscious representation) processes and (b) their time pattern (or tardiness of controlled processes and their awareness).

### ***Embodied cognition, acquiring of values and forming a character***

Returning to the developmental growth of children, Sechenov (2013, originally published 1863) described that the “passion” of toys and play pass with time, though deep convictions related to this behaviour remain and can acquire other forms. The boy who played a lot with knights, fighting for high moral values, will conserve his deep conviction to fight for justice: as a soldier, general or advocate, for example, or simply a noble person. During development children first like the “images” of their toys, and wish to be like their “heroes”. Later, they transfer the qualities of these heroes to their own qualities as a model to follow: to be strong and without fears, to be generous and sympathetic, kind and honest, etc. The child, fusing with the image of his favourite hero, identifies with its qualities and transfers them into his own identity. Playing with his hero (it can be a reproduction of the live examples that surround him as well, parental, close friends or significant teacher figures, imaginary heroes from books, movies or videogames), the child repeats many times the actions of his “model”, words and attitudes toward to others, i.e. visual, auditory and action behaviour. Prof Ivannikov (2010) also mentioned in the lecture dedicated to achieving of a socio-historical experience the importance of sense of the main activity of children: “Game (playing) is that type of activity of child, in which the norms of human relationships are discovered and supported.”

One of the modern proofs of one of the aspects of such kinds of “visual” fusion is the activation of somatosensory parts of brains, related to the action the person simply watches in a video game, TV or video record (Lee, Swinnen, & Serrien, 1994; Repp &

Knoblich, 2004; Scholz, 2010). Moreover, the so-called “mirror system” (formed by mirror neurons) matches observation and execution in goal-related actions and appears to be to some degree a “functional” equivalent somewhere between simulating, observing and performing an action (Sebanz, Knoblich, Stumpf, & Prinz, 2005). People tend to reproduce automatically by internal or imagined replication of the posture they observe, mimicking facial expressions, gestures; and this covert imitation requires the use of implicit knowledge of one’s body (Bosbach, Knoblich, Reed, Cole, & Prinz, 2006). Moreover, the embodiment of cultural rituals and habits also involves day-to-day observation together with explicit instructions and mimetic reproduction of the actions performed by elders and peers (Kimmel, 2013).

### Proprioception, motor control and health

Rosenbaum (2005), in his work “The Cinderella of Psychology”, astutely observed that motor control is underestimated in psychology. Proprioception, as a basic sense, was also disregarded due to its more unconscious nature, if we see the traditional classification of senses as also being that it controls all other types of senses. However, with a special focused attention and training in the proper contraction and relaxation of muscle, proprioceptive sensitivity can be understood and used in the process of conscious control of movements (their strength, speed, scale, rhythm and sequence). Proprioception plays an important role in the construction of movements, formation of movement skills and in regulation of muscle tonus. Proprioception also contributes to speech function or speech kinaesthesia and to general physical well-being and sense of cheerfulness (*Proprioception*, 2009).

In healthy adults, proprioception works properly and helps people to carry out their daily domestic and professional tasks, as well as favourite activities (hobbies) that allow them to maintain the quality of life until the aging effects appear. However, any disturbances in life, stress, trauma and illnesses affect the proprioceptive state that both reflects and is related to physical, emotional and cognitive functions. For example, proprioceptive dysfunction was observed in children with autism: their movements were uncoordinated and clumsy (it was estimated that 80% of subjects with Asperger Syndrome displayed “motor dyspraxia”), and they performed poorly at one-legged balance with eyes closed (Weimer, Schatz, Lincoln, Ballantyne, & Trauner, 2001) or slowly adapted in comparison to a control group (Izawa, Pekny, Marko, Haswell, Shadmehr, & Mostofsky, 2012). Other studies reported that children with clinically avoidant personality traits showed a significantly poorer motor performance than the control group (Kristensen & Torgersen, 2007), and children with Down’s syndrome were significantly lower in scores for both gross and fine motor skills, as well in running speed, balance, strength and visual motor control (Connolly & Michael, 1986).

Postural control was altered in patients with bipolar disorder: sway was increased in the absence of vision (Bolbecker, Hong, Kent, Klaunig, O'Donnell, & Hetrick, 2011), and in a case of obesity (Teasdale, 2012). The existence of a relationship between proprioceptive information in the fine graphomotor drawings and the immune systems (IgG and IgM) was reported in a study conducted by the Mira y Lopez Laboratory (Personality Department, Faculty of Psychology at the University of Barcelona) by Prof Tous and collaborators (Tous, Vidal, Viadé, & Muiños, 2002). Both dysfunctions of proprioceptive and of sensory integration of proprioception and vision (for some movement types) were observed in patients with Parkinson (Gironell, Luitsko, Muiños, & Tous, 2012), persons with personality disorders (Tous, Grau, Viadé, & Muiños, 2005), in the case of persons with aggressive behaviour (Tous, Viadé, Chico, & Muiños, 2002) and prison inmates (Tous, Muiños, Chico, & Viadé, 2004). However, proprioception has a critical role in the reorganization and subsequent recovery of neuromotor systems and this sense is the "most important source of feedback for promoting neural plasticity" (Goble, 2010).

### **Proprioception relations with attention, memory and emotions**

*How can a brain have experiences?*

*The human psyche perceives any external body as really (actually) existing only due to the idea of the state of one's own body... If a human body is not exposed to action from any external body, then the idea of human body, e.g. the human psyche, is not affected by any action from the side of idea or existence of this body; in other words, it does not perceive the existence of this body in any way. Spinoza B., 1957 (cited in Ivannikov, 2010, translated by Liutsko)*

The cognition due to proprioceptive sense and body states allows a multisensory representation of subject to be experienced. Once experienced, the object has more qualities than its simple abstract meaning. For example, after having the experience of easing into a chair, we later relate with a category "chair" what we had obtained from this experience: how the chair looked, what was the tactile sense and "record" of the material it was made of, what we felt sitting there (comfort and relaxation) (Barsalou, 2008). "Grounded cognition" reflects the assumption that cognition is typically grounded in multiple ways: simulations, situated action and sometimes bodily states. For example, a pianist's ability to identify auditory recordings of his/her own playing depends on stimulation of the motor actions underlying it (Repp & Knoblich, 2004). Hamilton (2005) defends the view of proprioceptive knowledge as a perceptual one or as a part of the material from which the latter concepts are formed, a part of direct knowledge we obtain of body states (we do not acquire; we just "know" [feel] that our legs are crossed or that this touch was painful).

In implicit memory, stimulations increase perceptual fluency and the likelihood that perceptions are categorized correctly; and motor simulations present in comprehen-

sion. Thus, when participants simply read the word for an action, the motor system became active to represent its meaning (Barsalou, 2008). Moreover, the presence of affective simulation was shown: when people read taboo words, the stronger affective reactions (measured by skin conductance) were found when they read in their first language than in a second one, acquired at later age (Harris, Aycicegi, Berko, & Gleason, 2003). However, it was shown that individual differences in skills, such as ballet correlated with an ability to mirror relevant action (Calvo-Merino, Glaser, Grèzes, Passingham, & Haggard, 2005).

### Proprioception as a basis of personality

A broader definition of proprioception exists including not only of pure physiological sense, but also expanded to the “self-perception of thought” in which thought is aware of its movements (Bohm, 2007). Gordon Allport introduced the term of “proprium” (“my own” from Latin) (Gordon Allport, 2006). Following his ideas, the development of “proprium” has eight stages in order to be mature, the first of comprises a proprioceptive awareness that together with interoceptive and touch sense were a basis of the whole “self” or “proprium” construction and development. The first phase of this construction or self-development is *The Sense of Body Self*, which is developed in the first two years of life, is a sense or awareness of one’s body and its sensations; it is a basic axis of personality development, an anchor for self-awareness (Liutsko, 2013a). On a base of it, other phases of proprium or self are evolved later: *Self-Identity*; *Self-Esteem* or *Pride*; *Self-Extension* (while at an early age, the child is identifying himself with his parents or joys that “pertain” to him, later this feeling is extended to other social groups (classmates, neighbours, and nation); at mature age this process can be expanded to the processes of development of abstract ideas and moral values); *Self-Image* (this is the “looking-glass self,” as others see me; It is the beginning of consciousness, ideal self, and persona); *Sense of Self as a Rational Coping being* (when the rational capacity to find solutions to life’s problems appears); *Propriate Striving or Motivation* (it is related to forming the ideal view of our self and direction for future development), and *Self as Knower or as Subject of knowledge* (development of man's capacity for self-knowledge and self-awareness) (Gordon Allport, 2006; Liutsko, 2013a).

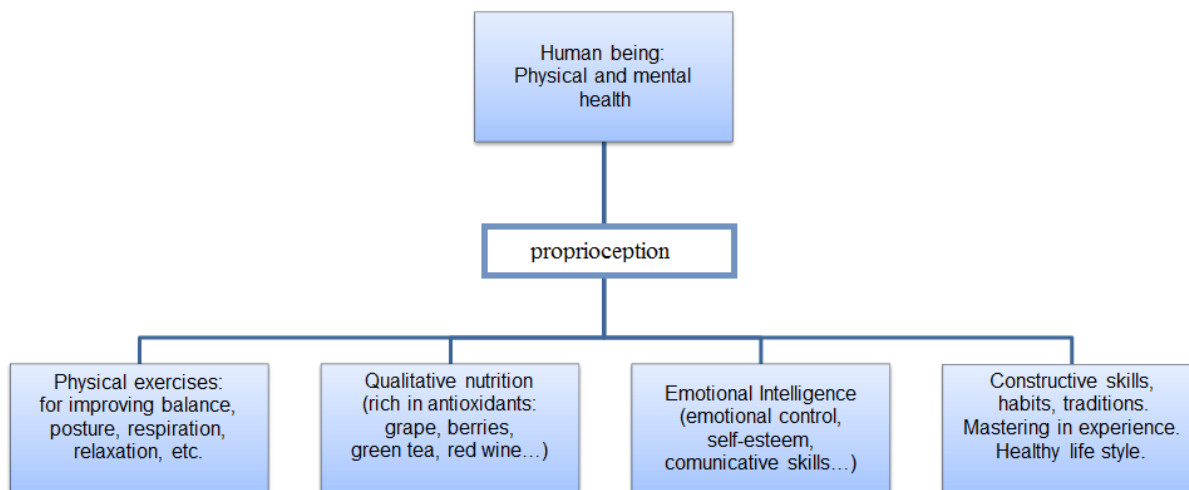
### The human health and quality of life

There are factors of individual control to improve our proprioception, health and quality of life; although sometimes environmental factors (both nature and society) should not be disregarded also. There are factors that we control only to a certain extent, but



not totally, like the natural aging process, which can be different (more or less qualitative), though, we cannot extinguish it fully. The summarized description of the main factors of control to improve our proprioception and, being an indicator of own state (physical health, emotional and cognitive states), is represented in Figure 1.

Figure 1. Proprioception: factors of control



Source: Liutsko (2013a, b)

These factors that help to maintain our proprioceptive state in better condition are the following:

1. Regular physical exercise;
2. Quality nutrition;
3. Emotional control or Emotional Intelligence;
4. "Good" or constructive skills, habits (including a healthy life style) and traditions. Mastering or improving in professional and other skills.

The factors are interrelated between them also since physical exercises and qualitative nutrition would affect the emotional state, as well constructive skills and habits would help to practice sport or maintain healthy diet on a regular basis.

### **Regular physical exercise**

Regular physical exercise or work (in sensible amounts) helps to maintain good physical form, and thus good self-esteem and body balance. Moreover, it makes a significant contribution to maintaining posture, which in turn plays a crucial role in avoiding distortion of the spine and the skeleton and in reducing the risk of neurosis (*Posture*, 2008). Gellhorn (1964) pointed out that various "relaxation" therapies alleviate states of abnormal emotional tension by reducing proprioceptive impulses which maintain the cerebral cortex in an abnormal state of excitation.



Physical exercises, especially those that are related to improving equilibrium (balance), relaxation, proper respiration and proprioceptive consciousness such as Yoga, Tai-Chi, Pilates, etc., as well as dancing and singing, can be useful. For example, the slow and focused movements of Tai Chi practice provide an environment wherein the proprioceptive information being fed back to the brain stimulates an intense, dynamic "listening environment" to further enhance mind/body integration. Several studies showed the effectiveness of physical and proprioceptive exercises for balance, good emotional state and reducing aging affects (Lelard, Doutrelot, Pascal, & Ahmaidi, 2010; Tse & Bailey, 1992; Shin, 1999). The ancient Slavic method, called "Pravilo" (with emphasis on "i" in Russian meaning "Correction"), is used to balance internal energy and stretch both muscles and joints removing the clamps and physical blocks, helping to discover hidden reserves and creativity, promoting health. This tradition was used by Slavic defenders before combat with enemies to reduce fear and to be prepared for extreme situations (Pravilo, 2011).

### **Quality nutrition**

In general healthy (and prudent quantities of) food is the main source of human physical being and activity, as well as of mood or emotional state. Some elements rich in vitamins C and E, and flavonoids (such as berries, grapes, green tea, red wine) were found to have an antioxidant effect (Seroka, 2011; Willis, Shkitt-Hale, & Joseph, 2009; Berg, Kirkham, Wang, Frisen, & Simon, 2011), that can compensate the negative effects created by stress on organism and thus be effective to maintain proprioception on better state. Moreover, healthy diet helps to avoid overweight, which has effects on human balance (Teasdale, 2012), as in its turn closely related to proprioception and mood.

### **Emotional control or Emotional Intelligence and Education**

*All moral education of children comes down to good example. If you live well or intend to live well, and in so far as you succeed in your "goodness" in life, children will have a good education (translated by author).*

*Leon Tolstoy (Aphorism, 2007, translated by Liutsko)*

Although all of us had "bad" models we acquired and followed automatically during our development, maturation or adult life, sometimes it seems very difficult to "forget" the wrong or destructive habit. Since it was repeated hundreds or thousands of times and was "incrusted" in our "natural" behaviour, we consider that "we are like this". For sure, both cognitive and conscious control together with strong will and persistence are required to substitute a destructive habit with another, more healthy (for us) and appropriate (for both us and the environment) one. A large store of patience is needed to change the "old" custom, and sometimes also the support of others. Constant awareness, attention and self-control help in reaching a new model to replace an

old one. However, the “proprioceptive” principle will sooner or later work and give desirable results. As the Russian traditional proverb says, “Repetition is the Mother of Learning”; and it can be applied not only to abstract and cognitive learning, but also to “embodied” knowledge, and it is the crucial factor in one formation of good habits or professional skills.

*He who always wears the mask of a friendly man must at last gain a power over friendliness of disposition, without which the expression itself of friendliness is not to be gained- and finally friendliness of disposition gains the ascendancy over him: he is benevolent.*

*Friedrich Nietzsche (1876) (cited in Gellhorn, 1964, p. 457)*

Moreover, this change (new action) has an influence on perception: for example, James (1922) proposed that expressive behaviour affects the intensity of emotions; a finding that was supported by research experiments (McArthur, Solomon, & Jaffe, 1980).

Cole and Montero (2007) focused on a possible second role of the sixth sense (or proprioception) as an affective proprioception (similar to affective touch), which contributes to pleasure in and through a movement, which people can perceive, particularly professional dancers, musicians and sportsmen.

***“Good” or constructive skills, habit and traditions. Mastering or improving in professional and other skills. Maintaining a healthy life style.***

From one hand, stress reduces the defences of the immune system, accelerates aging processes and “takes its toll in Parkinson disease” as mentioned in the title of the article published in Science Daily (Nov. 11, 2012) due to superoxidation and free radical formation (Guzman, Sanchez-Padilla, Wokosin, Kondapalli, Ilijic, Schumacker, & Surmeier, 2010). For this reason both emotional control abilities and constructive habits and skills are required to maintain a healthy life style. Persons with personalities non-adaptive to stress have higher risk of certain illnesses: of type C are more vulnerable to infection and cancer, while of type A have twice the chance of suffering a sudden coronary disease (Robles Ortega & Peralta Ramírez, 2006). An acquisition of emotional competencies not only helps in the interactions of professional life, but also helps to create less stressful situations in communication at family level (Salovey & Mayer, 1990; Gippeneiter, 2007).

Proprioceptive state has significant relationship with cognitive and general academic performance: negative correlations were found between fine motor precision in the proprioceptive condition of test and our mnemonic memory and academic performance in secondary school pupils (Liutsko, Muiños, & Tous, 2012a); as well as emotivism dimension of DP-TC test with an academic performance of pupils independent on memory, showing effects of emotional control and maturity on their final grades

(Liutsko, Muiños, & Tous, 2012b). These findings report about the important relationship between proprioceptive state and quality of life.

Mastering skills helps to reduce stress since with time the skill does not require full attention and cognitive effort to implement it, allowing become more automatic. This autopilot performance lets us not only be more relaxed during the action, but also allows us to combine multiple actions at the same time. Moreover, it was proved that mastering certain activities helped to improve the performance of others. Thus it was shown that musical activities, such as playing the piano or flute, had positive effects on the development of kinetic and spatial functions of children, and in turn resulted in better academic performance (Glozman & Pavlov, 2007).

### **The Proprioceptive Diagnostics of Temperament and Character**

Working with the Luria's expressive analysis or "detector of lie" (Luria, 1932), Mira y Lopez noticed that amplitude of kinematic movements was different (inhibited persons made them shorter, while the excited ones made them broader, and this did not depend on the context of question). This observation together with Mira y Lopez's previous works, his doctoral thesis "*Somatic reactions of mental work*" (Mira, 1923) led to his creation of Miokinetic Psychodiagnosis (Mira, 1958). The main principle of Mira y Lopez was that "*psi-space is not neutral. All movements – voluntary and involuntary - performed by man, have a peculiar significance, according to the direction in which they were performed*" (cited in Spanish in Muiños, 2008).

Our Laboratory of Mira y Lopez in the Personality, Psychological Assessment and Treatments Department (faculty of Psychology, University of Barcelona) made contributions to this area as well, especially in the direction of innovation of the methodology, its digitalization with use of new technologies (Tous, 2008; Tous Ral, Muiños, Tous Lopez, & Tous Roviroso, 2012; Tous, Muiños, Liutsko, & Forrero, 2012), and validation of the initial technique (its quantitative part) (Muiños, 2008) as part of other researches and applicative works.

#### ***Brief Description of the Proprioceptive Diagnosis of Temperament and Character observable variables***

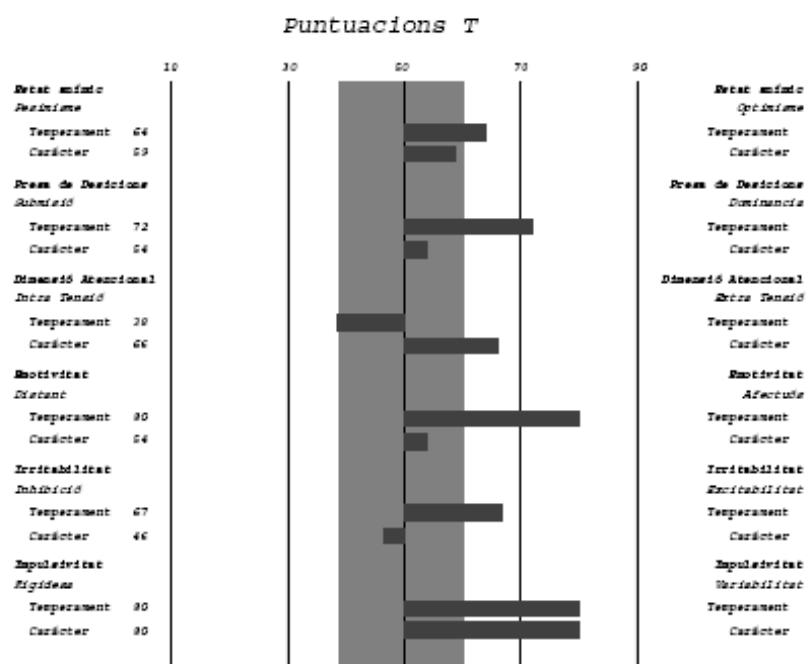
In the studies carried out to develop the Proprioceptive Diagnosis of Temperament and Character (DP-TC abbreviation from Spanish) test the exploratory factor analysis (Tous, Viadé, & Muiños, 2007) and the subsequent confirmatory factor analysis (Muiños, 2008) showed that the instrument had six orthogonal bipolar factors:

1. *Mood* (pessimism - optimism);
2. *Decision-Making* (submission - dominance);
3. *Attention Style* (intra-tension - extra-Tension);

4. *Emotivism* (cold/distant - warm/affiliated);
5. *Irritability* (behavioural inhibition - behavioural excitability);
6. *Variability* (rigidness - variability or impulsivity in behaviour).

These factors are different from those that can be obtained on verbal tests since they correspond to how a person really behaves, rather than to what he/she thinks about his/her behaviour.

Figure 2. Psychological profile obtained from DP-TC test (application version for professionals)



Note: The T-scores are given in comparison with standardise population values (the area in grey represents  $\pm 1$  SD from the population mean value).

Source: Liutsko, L. (2013b)

Since this is a projective method that is difficult to fake, the observable behaviour at the proprioceptive level would help to construct the whole personality structure, it describes the intrinsic dispositional behaviour that sometimes can be inhibited and thus hidden in the verbal assessments of personality and behaviour. It would help to understand the individual differences (both of temperament and character) in tendencies of some parameters of the emotional intelligence, which is also considered by some researchers to be a part of personality (Petrides, Pita & Kokkinaki, 2007). It can be an objective method in personality assessment, especially when the replies can be biased due to social desirability or personal motivation, applying to job position, or related to security - drive o gun permission licences (Tous, Liutsko & Muiños, 2014 *in*

press). Moreover, the qualitative analysis of performance can indicate the risk of having any neurological disturbances, such as Multiple sclerosis, for example (Liutsko & Tous, 2013).

## Conclusions

Proprioceptive sense is a crucial for the emotions (expression, recognition and regulation) and a base of acquiring habits and skills. Since the proprioception is used mainly on unconscious or automatic level, the conscious awareness of it would help in emotional education to understand the mechanisms of undesirable and destructive habits from one hand and to strength the positive and constructive ones with regard of multiple levels of intervention (cognitive and physical). The integrated approach in having the proprioception in the equilibrated state via physical exercises, nutrition, emotional intelligence and acquiring healthy and constructive habits (all of them are interrelated each with others) would help to keep a qualitative and healthy life style. The review of works represented in this article shows the importance of the integrated (physical-cognitive or body-mind) approach in re-education and therapy in order to obtain more effective results. Taking into account multiple aspects of maintaining healthy and qualitative life style would help to "maturate" the proprioceptive sense in children, as well as to maintain it more from the negative effects due to natural aging.

The Proprioceptive Diagnostics of Temperament and Character (Tous et al., 2012) can play a useful role in screening of the current proprioceptive state of the person at the objective level and help to deep the personal profile in order to make the psychological or educative intervention more effective. Areas of application: human resources; coach, psychology, therapy and education; neuropsychology, clinical psychology and psychiatry; medical revision (drive licence) and for security questions (evaluation of dispositional components of human behaviour).

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## Escritura emocional autorreflexiva: una herramienta del orientador para el manejo del estrés en el alumno

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### Self-reflexive emotional writing: An orientator tool to handle with students' stress

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**Resumen.** El estrés es una reacción fisiológica del organismo. Pero muchas veces ese mecanismo que no es más que una forma de defensa del cuerpo puede alargarse en el tiempo y acabar convirtiéndose en una alteración psicológica y física. Esa alteración es a lo que con más frecuencia se denomina estrés.

Existe una gran cantidad de literatura científica que apoya la hipótesis que hablar o escribir acerca de las propias experiencias traumáticas tiene efectos positivos en la salud física y psíquica (Pennebaker, 1990; 1995; 2004). En este escrito se presenta brevemente una herramienta sencilla que el orientador puede llevar a cabo dentro de su trabajo diario con estudiantes.

El procedimiento básico desarrollado por James Pennebaker y modificado de acuerdo a las necesidades de la psicología educativa consta de algunas reflexiones desde una perspectiva constructivista post-racionalista que pueden permitir comprender mejor los procesos que intervienen cuando escribimos o hablamos sobre acontecimientos que están generando un daño emocional en nuestra persona y finalmente se exponen algunas variables a tener en cuenta que podrían permitir mejorar la eficacia de esta técnica.

La escritura terapéutica proporciona la posibilidad de acceder al innato potencial creativo así como descubrir las emociones y pautas del pensamiento más inconscientes. Con ello se contribuye a reducir el estrés mental reforzar la autoestima e incluso a fortalecer el sistema inmunológico Peenebaker (2004).

**Palabras clave:** estrés, escritura terapéutica, emociones

**Abstract.** Stress is a physiological reaction of human body. But sometimes, this way of human body defense can reach out as time goes by until it finally becomes a physical and psychological disturbance. This alteration is frequently named stress.

There is a huge amount of scientific literature which supports the hypothesis of talking or writing about the own traumatic experiences has positive effects over physical and psychological health (Pennebaker, 1990; 1995; 2004). The current writing briefly exposes a simple strategy that the school guide can build up with the students in the quotidian work.

The basic procedure was developed by James Pennebaker and it has been modified according to the Educational Psychology needs, it consists of some reflections from a constructivist post rationalist perspective that enable better understanding of the processes that interfere when