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DEVELOPMENT OF ATTENTIONAL PROCESSES BY MEANS OF "ADAPTED ACTIVITIES"

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Teachers in general, and particularly, teachers involved in certain educational stages (primary education and compulsory secondary education) express considerable concern about attentional problems. Indeed, the current high frequency of learning problems is due mainly to attentional deficits that are specific to students with learning difficulties (LD), or to attentional problems typical of students with ADHD (attention deficit disorder with or without hyperactivity). Either one of these problems will condition the onset and maintenance of any learning process, since they affect stimulus processing and the quantity and quality of concentration. Therefore, in the school setting, and especially in the compulsory stages, teachers should administer activities that promote attention, both selective and sustained. This work proposes a specific form of presenting such activities to students using activity banks, whose tasks are arranged according to difficulty and students' age and educational level, in a similar way to those of item banks.
Key words: *selective attention, sustained attention, attentional problems, activity banks*

Los problemas atencionales preocupan al profesorado, en general & especialmente al de algunas etapas educativas (educación primaria & educación secundaria obligatoria). De hecho, hoy en día son muy frecuentes los problemas de aprendizaje debidos, principalmente, a déficits atencionales específicos de estudiantes con dificultades de aprendizaje (DA) o a problemas de atención propios de los alumnos con TDA-H (trastorno por déficit de atención con o sin hiperactividad). Cualquiera de estos problemas condicionan el inicio & mantenimiento de cualquier proceso de aprendizaje porque afectan al procesamiento estimular & a la cantidad & calidad de la concentración. Por este motivo, en el contexto escolar, sobre todo en las etapas obligatorias, el profesorado debería aplicar actividades que potenciasen la atención, tanto selectiva como sostenida. En este trabajo se presenta un modo o forma concreta de presentar tales actividades a los estudiantes a partir de bancos de actividades, cuyas tareas, al igual que en los bancos de Ítems, están graduadas por dificultad, edad & nivel educativo.
Palabras clave: *Atención selectiva, atención sostenida, problemas de atención, bancos de actividades.*

Attention is the mechanism directly involved in the active reception of information, from the point of view of both its recognition and the control of psychological activity (García, 1997). Hence, it is a capacity that teachers must take into account if students are to learn effectively (Álvarez, González-Castro, Núñez, González-Pienda, Álvarez & Bernardo, 2007). But for attentional mechanisms to be set in motion and enhanced, and for students to be able to regulate them, they need to use certain procedures, related to so-called attentional strategies, whose educational importance has been clear since it was shown that they can be modified and improved through practice.

In this context it is important to bear in mind that attention is not something that functions independently, but is rather related to processes, of both a cognitive and motivational nature. This aspect is fundamental, since, as various authors point out (Roselló, 1997; Tudela, 1992), attention acts as a connection mechanism that articulates cognitive and affective processes, all of which are involved in determining which stimuli will be given priority for analysis and which will not. This evolution of attentional processing models toward those of a neoconnexionist type was initially influenced by *limited resource models* (Kahneman, 1973), for which attention would depend not only on the subject's disposition to pay attention, but also on the demands of the task in question. Manoeuvring these two aspects is crucial to an inclusive educational system, as such a system needs to develop adaptive models that take careful account of diversity (Álvarez, Soler, González-Pienda, Núñez & González-Castro, 2002).

However, the limitation of attentional capacity is not assumed as an absolute concept by advocates of

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activation models, given that attention, as an active and constructive mechanism, is modified with practice, each person generating their own attentional potential. Such potential will be determined not only by cognitive elements, but also by conative and affective ones, whose interaction is described in the first neoconnexionist model of attention (Phaf, Van der Heijden & Hudson, 1990), the "Slam" model, which demonstrates changes in attentional capacity through continued practice. These changes in explanatory models of attention have considerable implications for processes of both selective attention and sustained attention.

Selective attention

Selective attention involves the ability to discriminate stimuli within sets or groups, and thus to be able to recognize them and process them with the minimum of error. This process begins with a spatial selection phase, which is followed by a phase based on the characteristics of the object (Vázquez, Vaquero, Cardoso & Gómez, 2001). Indeed, the two phases can coexist, given that, as demonstrated by various authors using the visual evoked potentials technique, the P1 and N1 potentials can be modulated both by attention based on the stimulus field (Méndez, Ponce, Jiménez & Sanpedro, 2001) and by attention based on specific stimuli (Valdés-Sosa, Bobes, Rodríguez & Pinilla, 1998). Hence, selective attention will be conditioned by certain visual abilities studied in depth from *functional* (or *behavioural*) *optometry*, which evolved from initially *quantitative* postures in which the most important element was visual acuity (independently of the stimulus context) to more *qualitative* currents which now take into account both the subject's needs and the task characteristics. In this regard, a visual system adapted to the subject's needs should focus on the study of binocular vision, which permits the perception of a common visual direction for the two eyes, a sensation of depth, good spatial judgement, perception of a single image and superposition of visual fields.

The visual abilities necessary for developing binocular vision with these characteristics are abilities related to control and abilities related to the recognition of information. *Visual abilities of control* involve ocular motility in general and saccadic and convergence movement in particular. *Saccadic* movement is precise eye movement from one point to another, and is highly conditioned by the visual field. *Convergence* is the capacity for moving the eyes towards the nasal area without losing fusion (Daum, 1984). There are several types of convergence, among which can be distinguished: tonic, proximal, accommodative and fusional convergence (Goss, 1995; Morgan, 1983). Tonic Convergence represents the physiological position: the evaluation of the phoria with correction measured at a distance is taken as the value of this position. Proximal Convergence is the convergence that occurs after the approach of a specific stimulus. Accommodative Convergence occurs with a change in accommodation as part of the close synkinesis of accommodation, convergence and pupillary constriction (Moses, 1987). Finally, Fusional Convergence is the convergence necessary for maintaining a fused image of a fixated object.

Visual abilities of recognition, on the other hand, involve fixation and binocular control. *Fixation* is the stimulation of the retinal cells situated in the fovea, when the visual axis is centred on a point and the central retina is checking the information. Fixation must, therefore, be centred on the fovea and, moreover, stable and precise. But although fixation is under voluntary control, its conscious and deliberate control is rather infrequent. It is governed by the same rules as the formation of units, so that there occur at the points of maximum information colour contrasts and brightness and shapes of objects. MacWorth and Morandi (1967) discovered that the most informative areas are identified very early, and are those with the greatest number of fixations. A fixation often takes place as a result of information acquired previously via peripheral vision. In fixations, three types of region can be distinguished: stationary field, ocular field and head field. The stationary field is that in which all the information is analyzed without the need for tracking. The ocular field is that which is opened up through eye movements. In this field the subject has the option of directing an ocular fixation on an unverified observation and verifying his or her hypothesis through a movement of the eyes. This movement depends on the instructions and the costs associated with the stimulus and on its nature. Finally, the head field is the visual field in which, to obtain verified information, it is necessary to move not only the eyes but also the head. For obtaining information in the ocular and head fields one must make decisions rapidly and with little reflection. Thus, it is important to stress that this phase of reception of visual stimuli is a key one in reading, but not a sufficient one, insofar as binocular control is also necessary. *Binocular control* is

the subject's capacity for maintaining fusion, fixating at short distances, when accommodation and convergence demands are high. In reading, the convergence or fixation point is constant, but the accommodation varies significantly between the acts of locating (peripheral retina saccade) and fixating (central retina). It is known that accommodation involves a degree of convergence induced by the functioning of the sympathetic nervous system. This convergence must be compensated by the binocular capacity which, moreover, is conditioned by the position of the visual axes or phoria. Therefore, if in addition to a convergent position of the visual axes there is accommodative convergence, binocular control has to invest great effort to achieve fusion. Such fusion is attained by means of fusional vergences, which have the capacity to converge and diverge so as to maintain retinal correspondence (stimulation of two points of each retina analyzed by the same hypercolumn).

Therefore, so that selective attention can be applied in the best conditions possible and develop its full potential, it is necessary to stimulate, on the one hand, the visual abilities of control (saccadic and convergence) and, on the other, the visual abilities of recognition (fixation and binocular control). In order to generalize the effects of such stimulation in the school context, stimulus identification and recognition abilities need to be dealt with through specific tasks, which can be carried out in the classroom by means of activity banks.

Sustained attention

Sustained attention, for its part, is more related to the capacity for concentration, and tends to be strongly conditioned by attention deficit with or without hyperactivity. This deficit, especially in cases of ADHD (Attention Deficit Hyperactivity Disorder), is a congenital problem that affects the general population, mainly males, and can emerge at any age, though the DSM-IV does not diagnose it until after age six (Barbero, 2005). It has considerable detrimental effects on the personal, family and, above all, school contexts. Students with problems of sustained attention tend to have difficulty learning to read (between 25% and 40%, according to Willcutt and Pennington, 2000) and with mathematics (between 24% and 60%, according to Barkley, 1998). Such difficulties cannot usually be overcome with pharmacological treatment alone, due to defects in the functioning of the executive and vigilance networks (Merrell & Tymms, 2001; Roselló, 2002).

The *executive attentional network* is made up of the anterior cingulate cortex (closely associated with the resolution of conflicts between stimuli, coordination of two tasks, detection of errors and attention to language), the superior supplementary motor area (Posner & Petersen, 1990) and parts of the basal ganglia, which provide dopamine to the frontal lobes (Duncan & Owen, 2000). The executive network is responsible for voluntary control of working memory and for the selection and detection of target stimuli (Posner & Dehaene, 1994). It is activated in response to tasks that require the emission of new responses, in situations of interference or awareness of having committed an error, and in planned actions (Posner & DiGirolamo, 1998).

The *vigilance network*, on the other hand, is more related to the degree of disposition the subject needs for performing a task. This disposition depends on the arousal level, related to the action of different neural systems, such as the ascending reticular arousal system of the brain stem, the ascending noradrenergic pathways, the right frontal cortex, the cingulate gyrus and the corpus callosum (Parasuraman, Warm & See, 1998). Arousal levels vary according to the task (May, 1999), and can be controlled independently of it or through specific actions. Initial control, independent of the task, is closely related to global attentional capacity, which correlates strongly with brain metabolism and blood supply (Toomin, 2002). Control based on performance, on the other hand, can be carried out using CPTs (of the TOVA type), vigilance tasks such as the Children Sustained Attention Task (CSAT; Servera & Llabrés, 2004) or observation scales (Conners, 1997; Swanson, 2003; Miranda, García & Soriano, 2005; Amador, Forns, Guardia, Peró, 2006). However, from the academic perspective this control should also take into account some indicators specific to activity in the school context, such as stimulus recognition, strategic content management, continuous effort and adaptation to the context; hence, treatment with drugs, while it helps, is not considered sufficient (Barkley, 1992; Lubar, 1993) for promoting academic improvement: also necessary are activities that enhance the effects of the treatment, so that teachers, and above all parents and the students themselves, can sense reinforcement through the new results obtained.

Activity banks

Activity banks, like item banks, are sets of tasks graded according to degree of difficulty and prospective

respondents' age and educational level. They are customarily developed on the basis of the following considerations:

a) The exercises proposed in the banks tend to have a medium level of difficulty, which can be increased or reduced according to the abilities and needs of the target students.
b) Many exercises are accompanied by variants that can act as a basis for new activities.
c) With the aim of maintaining students' interest without tiring them out, the exercises are presented in a sequence. The sequence can be increased or reduced according to individual circumstances.
d) It is advisable to mark the activities carried out. This marking can be done by the teacher or, with the appropriate support, by students themselves, individually or in groups.

BOX 1
DESCRIPTION OF THE CONTENT OF FILES OF THE ACTIVITY BANKS FOR TRAINING SELECTIVE ATTENTION

1st File: *Identify stimuli within sets.*
1st Folder: Recognize letters, figures, symbols or drawings.
2nd Folder: Recognize letters to form words, figures to form numbers, symbols and other graphic elements to form illustrations, etc.
3rd Folder: Locate the occasions on which an element is repeated (word, number, geometric figure, symbol, drawing, etc.) in a set.
4th Folder: Choose, among various disordered elements (syllables, endings, words, numbers, geometric figures, symbols, drawings, etc.), those that appear in a given model.

2nd File: *Compare stimuli within sets.*
1st Folder: Recognize words, numbers and other elements with a given characteristic.
2nd Folder: Identify words, numbers and other elements that are similar or different within the same set.
3rd Folder: Locate elements that are repeated or missing in two or more independent sets.
4th Folder: Find the differences or similarities between drawings.

3rd File: *Identify stimuli within a series.*
1st Folder: Continue series of letters, numbers, symbols, drawings, etc., after being given the first elements.
2nd Folder: In a succession of elements, identify all those that belong or not to the series, or constitute errors.
3rd Folder: Substitute elements in a succession.
4th Folder: Choose elements to complete words, numbers or figures.

4º File: *Recognize stimuli on a map or in space.*
1st Folder: Join up points following instructions.
2nd Folder: Fill in gaps following instructions.
3rd Folder: Draw lines or itineraries following instructions.
4th Folder: Construct puzzles with letters, numbers or figures.

5th File: *Recognize words or phrases that meet a series of stipulated conditions.*
1st Folder: Locate words synonymous with those given.
2nd Folder: Give antonyms for known words.
3rd Folder: Identify objects, words, main ideas, important details, etc., following some instructions.
4th Folder: Recognize the meaning of phrases, sayings, proverbs, fables, etc.

The starting point for all activity banks are the guideline or indicators for each area of the bank. Each one of them will give rise to a varied and almost indefinite number of exercises for training each learning process. These exercises will consist of a base, some instructions and some variants. The *base* is made up of the elements, the data, and so on, provided, and with which the activity is to be carried out. The instructions are indications given to the students about what they have to do and how they should perform the activities. The *variants* are guidelines intended to facilitate the drawing up of similar exercises and, thus, the enlargement of the activity bank. Variants can be of three types: statement, content or exercise. The *statement variant* refers to when, on the same base as the original exercise, the instructions to the exercise are changed: for example, a different element is crossed out in the same task. The *content variant* refers to when the structure of the original exercise is maintained but its constituent elements are changed: for example, numbers instead of letters. Finally, the *exercise variant* refers to when, within the same training area, exercises with different bases and different instructions are proposed. In turn, exercises may have *multiple-possibility* formats (several tasks starting out from a common base) or may introduce progressive exercises (from a sample, multiple activities in the same style can be developed).

The majority of the exercises can be modified or regulated to convert them from difficult to easy or from easy to difficult. Thus, when it is suspected that one of the tasks proposed might prove difficult, given the students' low educational level, certain resources can be used to decrease the level of difficulty; aids can be employed or the type of task can be modified. Aids can consist in doing a few examples first, to give respondents an idea before presenting them with similar exercises, or in giving the answers to the exercises that will be expected to cause difficulties. Another form of providing aids is by changing the task type to a simpler one. Possible suggestions for lowering the difficulty level would include converting the exercise format into a *simple pairing task* or a *multiple-choice task*.

Suggestions for increasing the degree of difficulty of an exercise would include removing intermediate questions to arrive at the final result, giving the data in different units of measurement, reducing the size of the stimuli and their distance apart, increasing the number of stimuli, removing examples, or removing some steps in the application process.

Structure of the selective attention activity bank

All of the above recommendations should be taken into account if groups of adapted activities are to be designed. In the case of selective attention, in order to create a bank it is recommended to construct five files, each with four folders that develop them. This can be represented graphically as shown in Figure 1.

Files would bear the following headings:

1st File: *Identify stimuli within sets.*
2nd File: *Compare stimuli within sets.*
3rd File: *Identify stimuli within series.*
4th File: *Recognize stimuli on a map or in space.*
5th File: *Recognize words or phrases that meet a series of stipulated conditions.*

And the four folders shown in Box 1 would be included in each file.

The bank, with its files and folders, can be employed by the psychological guidance department or the assessment board; if used in a partial manner, it can also be applied with relevant age groups within the normal curriculum. Once in place, teachers at the school can add more activities in each corresponding folder and file. The creation of activity banks in schools helps, on the one hand, teachers' motivation to apply activities they themselves have created and, on the other, coordination between class teachers or tutors and the guidance department, since the educational psychologist, in his/her reports, can make recommendations based on the tasks in the bank. Furthermore, apart from the possibility of developing an original activity bank at each school, teachers can use some programs already created based on this philosophy (Álvarez & González-Castro, 2004).

BOX 2
DESCRIPTION OF THE CONTENT OF FILES OF THE ACTIVITY BANKS FOR TRAINING SUSTAINED ATTENTION

1st File: *Reproduce totally or partially similar or opposite models to those given.*
1st Folder: Copy or trace drawings (identical or symmetrical) with some accuracy.
2nd Folder: Draw models that are partially similar to or different from those given.
3rd Folder: Construct or complete diverse models using the elements (verbal, numerical or graphic) of which they are made up.

2nd File: *Mentally retain elements or models in order to reproduce them or relate them to others.*
1st Folder: Faithfully reproduce a model previously seen and memorized.
2nd Folder: Locate elements in new sets, comparing them with others previously memorized.
3rd Folder: Pair off elements the same as others previously seen and retained in the memory.

3rd File: *Place in a certain order the elements of a known set.*
1st Folder: Put in order sets of diverse elements according to certain criteria.
2nd Folder: Put in sequence the steps of a known process so as to be able to apply it.
3rd Folder: Establish operations for obtaining some results.

4th File: *Establish relationships between elements in accordance with certain conditions.*
1st Folder: Attribute properties to elements in isolation or in comparison with others.
2nd Folder: Locate concepts related or not to those given according to certain conditions.
3rd Folder: Establish classifications of given elements on the basis of various criteria.

Structure of the sustained attention activity bank

As in the case of selective attention, in order to build a sustained attention activity bank it is advised to use four files, each with three folders that develop them (see Figure 2).

Files would bear the following headings:

1st File: *Reproduce totally or partially similar or opposite models to those given.*

FIGURE 1
GRAPHIC REPRESENTATION OF AN ACTIVITY BANK FOR TRAINING SELECTIVE ATTENTION

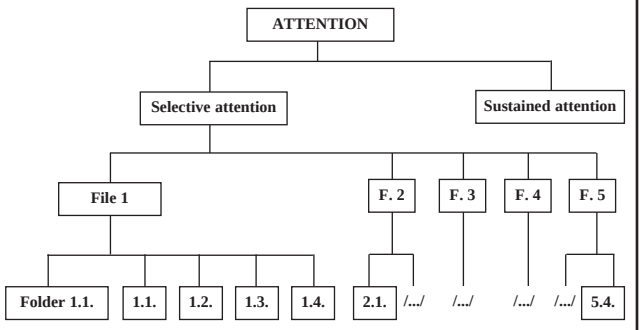
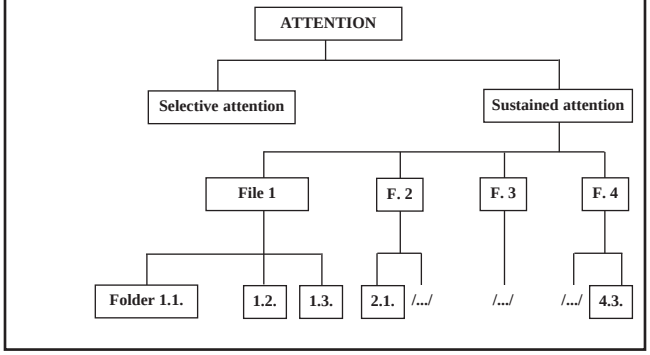


FIGURE 2
GRAPHIC REPRESENTATION OF AN ACTIVITY BANK FOR TRAINING SUSTAINED ATTENTION



2nd File: *Mentally retain elements or models in order to reproduce them or relate them to others.*
3rd File: *Place in a certain order the elements of a known set.*
4th File: *Establish relationships between elements in accordance with certain conditions.*

And the four folders shown in Box 2 would be included in each file.

The activities for the banks can also be developed in computer language with "Clic" (clic.xtec.net/es/index.htm). This program was created for Windows 3.1 and is available in seven languages. Its development began in 1992, and since then it has been used to create thousands of activities addressing a range of educational fields and levels. Clic served as the basis for producing the CD *¡Fíjate & concéntrate más!* ("Pay attention and concentrate harder!"), by Álvarez, González-Castro, Redondo and Busquets (2004), on which the files become objectives with the aim of making the program more understandable for users. Each objective is achieved by completing a set of activities with an 80% success rate, which permits the user to move on to the next objective. Although the number of activities for each objective is finite in the program, it is possible to create new activities if this is fe lt appropriate.

With the structure of the activity banks proposed, teaching staff will be able to generate their own materials, and thus to develop banks adapted to their particular context.

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REFERENCES

Álvarez, L. & González-Castro, P. (2004*). ¡Fíjate y Concéntrate más!..para que atiendas mejor*. Nivel 1, 2, 3 and 4. Madrid: CEPE.

Álvarez, L., González-Castro, P., Redondo, J. J. & Busquets, F. (2004*). ¡Fíjate y Concéntrate más!..para que atiendas mejor*. CD 1, 2, 3 and 4. Madrid: CEPE.

Álvarez, L., Soler, E., González-Pienda, J. A., Núñez, J. C. & González-Castro, P. (Coods.) (2002). *Diversidad con Calidad. Programación Flexible*. Madrid: CCS.

Alvarez, L., González-Castro, P., Núñez, J. C., González-Pienda, J. A., Alvarez, D. & Bernardo, A. (2007). Programa de intervención multimodal para la mejora de los deficits de atención. *Psicothema, 19, 590-595.*

Amador, J. A., Forns, M., Guardia, J. & Pero, M. (2006). Estructura factorial y datos descriptivos del perfil de atención y del cuestionario TDAH para niños en edad escolar. *Psicothema 18, 4,* 696-703.

Barbero, P. (2005). *Actualización de las bases neurobiológicas del TDAH. Últimas investigaciones*. Valencia. I Congreso Nacional de TDAH.

Barkley, R. A. (1992). Is EEG biofeedback treatment effective for ADHD children? *Ch.A.D.D. er Box, 5-11.*

Barkley, R. A., (1998). *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment*. New York: The Guilford Press.

Conners, C. K. (1997). *Conners Rating Scales-Revised*. Yoronto, Ontario: Multi-Health Systems.

Daum, K. (1984). Convergence Insufficiency. *American Journal Physiologic Optometric, 61*, 16-22.

Duncan, J. & Owen, A. M. (2000). Common regions of the human frontal lobe recruited by diverse cognitive demands. *Trends in Neuroscience, 23*, 475-482.

García, J. (1997). *Psicología de la atención*. Madrid: Síntesis.

Goss, D. (1995). *Ocular Accommodation, Convergence and Fixation Disparity. A manual of clinical analysis*. Boston: Butterworth-Heinemann.

Kahneman, D. (1973). *Attention and Effort*. Englewood Cliffs, NJ: Prentice-Hall.

Lubar, J. F. (1993). Innovation or inquisition: The struggle for ascent in the court of science. *Neurofeedback and ADHD. Biofeedback, 21,* 23-30.

Macworth, N. H. & Morandi, A. J. (1967). The gaze selects informative details within pictures. *Perception and Psychophysics, 2,* 547-552.

May, C. P. (1999). Synchrony effects in cognition: The costs and a benefit. *Psychonomic Bulletin & Review, 6*, 142-147.

Méndez, C., Ponce, D., Jiménez, L. & Sampedro, M. (Eds.) (2001). *La atención (Vol. II): Un enfoque pluridisciplinar*. Valencia: Promolibro.

Merrell, C. & Tymms, P. B. (2001). Inattention, hyperactivity and impulsiveness: Their impact on academic achievement and progress. *British Journal of Educational Psychology, 71*, 43-56.

Miranda, A., García, R. & Soriano, M. (2005). Habilidades narrativas de los niños con trastorno por déficit de atención hiperactividad. *Psicothema, 17 (2),* 227-232.

Morgan, M. W. (1983). The Maddox analysis of vergences. In C. M. Schor & K. J. Ciuffreda (Eds.), *Vergence Eye Movenents: Basic and clinical Aspects* (pp. 15-21). Boston, MA: Butterwoth-Heinemann.

Moses, R. A. (1987). Accommodation. In R. A. Moses & W. M. Hart (Eds.), *Adler's Physiology of the Eye*, 8th ed. (pp. 291-310). St Louis. MO: Mosby.

Parasuraman, R., Warm, J. S. & See, J. E. (1998). Brain systems of vigilance. In R. Parasuraman (Ed.), *The Attentive Brain* (pp. 221-256). Cambridge, MA: The MIT Press.

Posner, M. I. & Petersen, S. E. (1990). The attention system of the human brain. *Annual Review of Neuroscience, 13*, 25-42.

Posner, M. I. & Dehaene, S. (1994). Attentional networks. *Trends in Neuroscience, 17*, 75-79.

Posner, M. I. & DiGirolamo, G. J. (1998). Executive attention. Conflict, target detection and cognitive control. In R. Parasuraman (Ed.), *The attentive brain* (pp. 401-423). Cambridge, MA: MIT Press.

Phaf, R. H., Van der Heijden, A. H. C. & Hudson, P. T. (1990). SLAM: A connectionist model for attention in visual selection tasks. *Cognitive Psychology, 22*, 273-341.

Roselló, J. (1997). *Psicología de la atención. Introducción al estudio del mecanismo atencional*. Madrid: Psicología Pirámide.

Roselló, J. (2002). *Subtipos de trastornos por déficit de atención con hiperactividad. Manifestaciones, correlatos y efectos del metilfenidato*. Tesis Doctoral publicada en microfichas. Universidad de Valencia. Servicio de Publicaciones de la U.V.

Servera, M. & Llabrés, J. (2004). *CSAT: Tarea de atención sostenida en la infancia*. Madrid: TEA.

Swanson, J. M. (2003). SNAP-IV Teacher and Parent Rating Scale. In A. Fine & R. Kotkin (Eds), *Therapist guide to learning and attention disorders* (pp487-500). Nueva York: academic Press.

Toomin, H. (2002). Neurofeedback with hemoencephalography. *Explore for the professional*, 11 (2), 19-21.

Tudela, P. (1992). Atención. En J. Mayor & J. L. Pinillos, (Eds.), *Tratado de Psicología General. Vol. 3, Atención y Percepción*, 119-162. Madrid: Alhambra.

Valdés-Sosa, M., Bobes, M. A., Rodríguez, V. & Pinilla, T. (1998). Switching attention without shifting the spotlight: Object-based attentional modulation of brain potentials. *Journal of Cognitive Neuroscience, 10*, 137-151.

Vázquez, M., Vaquero, E., Cardoso, M. J. & Gómez, C. (2001). Atención basada en el espacio *versus* atención basada en el objeto: Un estudio psicofisiológico. In C. Méndez, D. Ponce, L. Jiménez & M. J. Sampedro (Eds.), *La atención (Vol. II): Un enfoque pluridisciplinar* (pp. 91-102). Valencia: Promolibro.

Willcutt, E. G. & Pennington, B. F. (2000). Comorbidity of reading disabilities and attention-deficit/hyperactivity disorder: Diferences by gender and subtypes. *Behavior Research Therapy, 31 (7)*, 701-710.